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THE
AMERICAN EPHEMERIS

AND
NAUTICAL ALMANAC

FOR THE YEAR

1903

FIRST EDITION

PUBLISHED BY AUTHORITY OF CONGRESS

WASHINGTON
BUREAU OF EQUIPMENT
1900

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Sec. 73. Of the Ephemeris and Nautical Almanac and of the papers supplementary thereto, one thousand five hundred copies; one hundred copies for the Senate, four hundred for the House, and one thousand for distribution or sale by the Navy Department. The five hundred copies printed for Congress and the usual number shall be for the calendar year next following, and those for the Navy Department for the third year following. The Secretary of the Navy is also authorized to cause additional copies of the Ephemeris, and of the Nautical Almanacs extracted therefrom, to be printed for the public service and for sale to navigators and others: Provided, That all moneys received from sales of the Ephemeris and of the Nautical Almanacs shall be deposited in the Treasury and placed to the credit of the general fund for public printing.

Approved, January 12, 1895.

P R E F A C E.

While the general arrangement of the *American Ephemeris* remains substantially the same as in 1902, some changes have been introduced in the present volume which may be briefly stated as follows: First, the adopted apparent semidiameter of the Sun at mean distance has been increased from 960.78" to 961.50", in accordance with a recent investigation by myself, which rests upon 35 842 meridian observations made at Greenwich, Paris, Washington, Königsberg, Madras, Milan, Dorpat, Modena, and Seeberg. Second, for computing the ephemeris of Neptune, Professor NEWCOMB'S new tables of that planet, published by this office in 1899, have been employed instead of his old tables, published by the Smithsonian Institution in 1865. Third, the ephemeris of σ Octantis is given for every day instead of for every tenth day, in order to permit the inclusion of the short period terms in the nutation, which affect the right ascension of the star by a full half second of time.

The Ephemeris is divided into four parts, as follows:

Part I, *Ephemeris for the Meridian of Greenwich*, which gives the ephemerides of the Sun and Moon, the geocentric and heliocentric positions of the major planets, the Sun's co-ordinates, and other fundamental astronomical data for equidistant intervals of Greenwich mean time.

Part II, *Ephemeris for the Meridian of Washington*, which gives the ephemerides for the fixed stars, Sun, Moon, and major planets for transit over the meridian of the new Naval Observatory, Washington. The mean places of the fixed stars and the data for their reduction are also included in this part.

Part III, *Phenomena*, which contains predictions of phenomena to be observed, with data for their computation. Washington mean time for the meridian of the new Naval Observatory is used throughout this part except in a few cases, notably those of eclipses, where Greenwich mean time seems more convenient.

Part IV, *Star numbers, apparent places of stars, and other data based on the Constants of the Paris Conference of 1896*, which gives precession, obliquity, etc., Besselian star-numbers, independent star-numbers, ephemerides of four northern and one southern circumpolar stars, and ephemerides of twenty-five other stars whose apparent places differ from those given in Part II.

WM. HARKNESS,
Professor of Mathematics, U. S. Navy,
Director Nautical Almanac.

WASHINGTON, December, 1899.

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CORRECTIONS.

Ephemeris, 1901.

Page.			
31.	Moon's Apogee and Perigee,	<i>for h m</i>	<i>read d h</i>
327.	Second Star	<i>for γ Cassiopeiz</i>	<i>read γ Cassiopeiz.</i>
345.	Apparent places of α Canis Majoris (<i>Sirius</i>),		<i>add + 0.08^s to all the Right Ascensions,</i> <i>and + 0.1'' to all the Declinations.</i>
551.	Tuscaloosa, long. from Washington,	<i>for $-0^h 41^m 56.03^s$</i>	<i>read $+0^h 41^m 56.03^s$</i>
581.	Corrections to Sirius for the effect of orbital motion,	<i>for -0.097^s</i> <i>for -0.114^s</i> <i>for $+1.13''$</i> <i>for $+1.02''$</i>	<i>read -0.017^s</i> <i>read -0.034^s</i> <i>read $\gamma 1.26''$</i> <i>read $+1.17''$</i>

Ephemeris, 1902.

381.	Second Star	<i>for τ Aquilæ</i>	<i>read ι Aquilæ.</i>
	EPH 1903—VI		

CHRONOLOGICAL ERAS AND CYCLES.

CHRONOLOGICAL ERAS.

THE YEAR 1903, WHICH COMPRISES THE LATTER PART OF THE 127TH AND THE BEGINNING OF THE 128TH YEAR OF THE INDEPENDENCE OF THE UNITED STATES OF AMERICA, CORRESPONDS TO—

The year 6616 of the Julian Period;

- “ 7411–7412 of the Byzantine era, the year 7412 commencing on September 1;
- “ 5663–5664 of the Jewish era, the year 5664 commencing on September 22, or, more exactly, at sunset on September 21;
- “ 2656 since the foundation of Rome, according to VARRO;
- “ 2650 since the beginning of the era of NABONASSAR, which has been assigned to Wednesday, the 26th of February of the 3967th year of the Julian Period; corresponding, in the notation of chronologists, to the 747th, and, in the notation of astronomers, to the 746th year before the birth of CHRIST;
- “ 2679 of the Olympiads, or the third year of the 670th Olympiad, commencing in July, 1903, if we fix the era of the Olympiads at $775\frac{1}{2}$ years before CHRIST, or near the beginning of July of the year 3938 of the Julian Period;
- “ 2215 of the Grecian era, or the era of the SELEUCIDÆ, which began near the vernal equinox of the year, — 311 = B. C. 312, = 4402 of the Julian Period;
- “ 1619 of the era of DIOCLETIAN;
- “ 2563 of the Japanese era and to the 36th year of the period entitled “Meiji.”

The year 1321 of the Mohammedan era, or the era of the Hegira, begins on the 30th day of March, 1903.

The first day of January of the year 1903 is the 2,416,116th day since the commencement of the Julian Period.

CHRONOLOGICAL CYCLES.

Dominical Letter	D	Solar Cycle	8
Epact	2	Roman Indiction	1
Lunar Cycle or Golden Number	4	Julian Period	6616

SYMBOLS AND ABBREVIATIONS.

SIGNS OF THE PLANETS, ETC.

☉	The Sun.	♂	Mars.
☾	The Moon.	♃	Jupiter.
☿	Mercury.	♄	Saturn.
♀	Venus.	♅	Uranus.
♁	The Earth.	♆	Neptune.

SIGNS OF THE ZODIAC.

Spring Signs.	{	1.	♈	Aries.	Autumn Signs.	{	7.	♎	Libra.
		2.	♉	Taurus.			8.	♏	Scorpius.
		3.	♊	Gemini.			9.	♐	Sagittarius.
Summer Signs.	{	4.	♋	Cancer.	Winter Signs.	{	10.	♑	Capricornus.
		5.	♌	Leo.			11.	♒	Aquarius.
		6.	♍	Virgo.			12.	♓	Pisces.

ASPECTS.

- ♌ Conjunction, or having the same Longitude or Right Ascension.
- ☐ Quadrature, or differing $\pm 90^\circ$ in Longitude or Right Ascension.
- ♌ Opposition, or differing 180° in Longitude or Right Ascension.

ABBREVIATIONS.

♈	Ascending Node.	°	Degrees.
♏	Descending Node.	'	Minutes of Arc.
N.	North.	"	Seconds of Arc.
S.	South.	h	Hours.
E.	East.	m	Minutes of Time.
W.	West.	s	Seconds of Time.

P A R T I

ASTRONOMICAL EPHEMERIS

FOR THE

MERIDIAN OF GREENWICH.

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S					Sidereal Time of Semi-diameter Passing Meridian.	Equation of Time, to be Added to Apparent Time.	Diff. for 1 Hour.
		Apparent Right Ascension.	Diff. for 1 Hour.	Apparent Declination.	Diff. for 1 Hour.	Semi-diameter.			
		h m s	s	° ' "	"	' "	s	m s	s
Thur.	1	18 43 09.30	+ 11.059	S. 23 04 42.6	+ 11.40	16 17.82	71.07	3 17.84	1.197
Frid.	2	18 47 34.51	11.044	22 59 55.3	12.55	16 17.83	71.03	3 46.40	1.184
Sat.	3	18 51 59.37	11.029	22 54 40.5	13.69	16 17.83	70.99	4 14.63	1.169
SUN.	4	18 56 23.85	+ 11.013	22 48 58.4	+ 14.83	16 17.82	70.94	4 42.48	1.153
Mon.	5	19 00 47.94	10.995	22 42 49.0	15.95	16 17.81	70.88	5 09.93	1.135
Tues.	6	19 05 11.58	10.976	22 36 12.7	17.07	16 17.81	70.82	5 36.95	1.116
Wed.	7	19 09 34.75	+ 10.955	22 29 09.5	+ 18.19	16 17.80	70.76	6 03.49	1.096
Thur.	8	19 13 57.43	10.934	22 21 39.8	19.29	16 17.79	70.70	6 29.54	1.075
Frid.	9	19 18 19.59	10.911	22 13 43.6	20.38	16 17.76	70.63	6 55.07	1.052
Sat.	10	19 22 41.19	+ 10.888	22 05 21.4	+ 21.47	16 17.73	70.56	7 20.05	1.029
SUN.	11	19 27 02.24	10.864	21 56 33.2	22.54	16 17.68	70.48	7 44.47	1.005
Mon.	12	19 31 22.69	10.840	21 47 19.4	23.60	16 17.65	70.40	8 08.30	0.981
Tues.	13	19 35 42.54	+ 10.814	21 37 40.2	+ 24.66	16 17.60	70.32	8 31.53	0.955
Wed.	14	19 40 01.76	10.788	21 27 35.9	25.70	16 17.54	70.23	8 54.13	0.929
Thur.	15	19 44 20.35	10.761	21 17 06.6	26.73	16 17.48	70.14	9 16.11	0.902
Frid.	16	19 48 38.29	+ 10.734	21 06 12.8	+ 27.75	16 17.41	70.05	9 37.43	0.875
Sat.	17	19 52 55.56	10.706	20 54 54.7	28.75	16 17.34	69.96	9 58.08	0.847
SUN.	18	19 57 12.15	10.678	20 43 12.7	29.74	16 17.26	69.86	10 18.07	0.819
Mon.	19	20 01 28.05	+ 10.648	20 31 07.0	+ 30.72	16 17.17	69.76	10 37.36	0.789
Tues.	20	20 05 43.24	10.619	20 18 38.0	31.68	16 17.09	69.66	10 55.95	0.760
Wed.	21	20 09 57.70	10.588	20 05 46.0	32.63	16 16.99	69.56	11 13.80	0.730
Thur.	22	20 14 11.44	+ 10.557	19 52 31.4	+ 33.57	16 16.89	69.45	11 30.92	0.699
Frid.	23	20 18 24.41	10.525	19 38 54.6	34.49	16 16.77	69.35	11 47.30	0.667
Sat.	24	20 22 36.63	10.493	19 24 55.8	35.39	16 16.66	69.24	12 02.92	0.635
SUN.	25	20 26 48.06	+ 10.461	19 10 35.6	+ 36.28	16 16.55	69.13	12 17.76	0.603
Mon.	26	20 30 58.71	10.428	18 55 54.2	37.16	16 16.43	69.02	12 31.82	0.570
Tues.	27	20 35 08.57	10.395	18 40 52.1	38.01	16 16.31	68.91	12 45.08	0.537
Wed.	28	20 39 17.62	+ 10.361	18 25 29.6	+ 38.85	16 16.19	68.79	12 57.54	0.503
Thur.	29	20 43 25.86	10.327	18 09 47.2	39.67	16 16.06	68.68	13 09.20	0.469
Frid.	30	20 47 33.28	10.293	17 53 45.2	40.48	16 15.94	68.57	13 20.03	0.435
Sat.	31	20 51 39.86	10.259	17 37 24.1	41.27	16 15.80	68.45	13 30.03	0.401
SUN.	32	20 55 45.62	+ 10.224	S. 17 20 44.2	+ 42.04	16 15.66	68.33	13 39.20	0.366

NOTE.—The mean time of semidiameter passing meridian may be found by subtracting 0.19 from the sidereal time. The sign + prefixed to the hourly change of declination indicates that south declinations are decreasing.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S				Equation of Time, to be Subtracted from Mean Time.	Diff. for 1 Hour.	Sidereal Time, or Right Ascension of Mean Sun.
		Apparent Right Ascension.	Diff. for 1 Hour.	Apparent Declination.	Diff. for 1 Hour.			
Thur.	1	^h 18 ^m 43 ^s 08.70	+ 11.053	S. 23 04 43.3	+ 11.39	^m 3 17.77	- 1.197	^h 18 39 50.93
Frid.	2	18 47 33.81	11.040	22 59 56.1	12.54	3 46.33	1.184	18 43 47.48
Sat.	3	18 51 58.59	11.025	22 54 41.5	13.68	4 14.55	1.169	18 47 44.04
SUN.	4	18 56 22.99	+ 11.009	22 48 59.5	+ 14.82	4 42.39	- 1.153	18 51 40.60
Mon.	5	19 00 46.99	10.991	22 42 50.4	15.94	5 09.83	1.135	18 55 37.16
Tues.	6	19 05 10.55	10.972	22 36 14.3	17.06	5 36.84	1.116	18 59 33.71
Wed.	7	19 09 33.65	+ 10.952	22 29 11.4	+ 18.18	6 03.38	- 1.096	19 03 30.27
Thur.	8	19 13 56.25	10.931	22 21 41.8	19.28	6 29.42	1.075	19 07 26.83
Frid.	9	19 18 18.33	10.908	22 13 46.0	20.37	6 54.95	1.052	19 11 23.38
Sat.	10	19 22 39.86	+ 10.885	22 05 24.0	+ 21.46	7 19.92	- 1.029	19 15 19.94
SUN.	11	19 27 00.84	10.861	21 56 36.2	22.53	7 44.34	1.005	19 19 16.50
Mon.	12	19 31 21.22	10.837	21 47 22.6	23.59	8 08.17	0.981	19 23 13.05
Tues.	13	19 35 41.00	+ 10.811	21 37 43.7	+ 24.65	8 31.39	- 0.955	19 27 09.61
Wed.	14	19 40 00.16	10.785	21 27 39.7	25.69	8 53.99	0.929	19 31 06.17
Thur.	15	19 44 18.69	10.758	21 17 10.7	26.72	9 15.97	0.902	19 35 02.72
Frid.	16	19 48 36.57	+ 10.731	21 06 17.2	+ 27.74	9 37.29	- 0.875	19 38 59.28
Sat.	17	19 52 53.78	10.703	20 54 59.5	28.74	9 57.94	0.847	19 42 55.84
SUN.	18	19 57 10.32	10.675	20 43 17.8	29.73	10 17.93	0.819	19 46 52.39
Mon.	19	20 01 26.17	+ 10.645	20 31 12.4	+ 30.71	10 37.22	- 0.789	19 50 48.95
Tues.	20	20 05 41.31	10.616	20 18 43.8	31.67	10 55.81	0.760	19 54 45.50
Wed.	21	20 09 55.72	10.586	20 05 52.2	32.62	11 13.66	0.730	19 58 42.06
Thur.	22	20 14 09.41	+ 10.555	19 52 37.9	+ 33.56	11 30.79	- 0.699	20 02 38.62
Frid.	23	20 18 22.34	10.523	19 39 01.4	34.48	11 47.17	0.667	20 06 35.17
Sat.	24	20 22 34.52	10.491	19 25 03.0	35.38	12 02.79	0.635	20 10 31.73
SUN.	25	20 26 45.92	+ 10.459	19 10 43.0	+ 36.27	12 17.64	- 0.603	20 14 28.28
Mon.	26	20 30 56.54	10.426	18 56 02.0	37.15	12 31.70	0.570	20 18 24.84
Tues.	27	20 35 06.36	10.393	18 41 00.2	38.00	12 44.97	0.537	20 22 21.39
Wed.	28	20 39 15.38	+ 10.359	18 25 38.0	+ 38.84	12 57.43	- 0.503	20 26 17.95
Thur.	29	20 43 23.60	10.325	18 09 55.9	39.66	13 09.10	0.469	20 30 14.50
Frid.	30	20 47 30.99	10.291	17 53 54.2	40.47	13 19.93	0.435	20 34 11.06
Sat.	31	20 51 37.55	10.257	17 37 33.4	41.26	13 29.94	0.401	20 38 07.61
SUN.	32	20 55 43.29	+ 10.222	S. 17 20 53.8	+ 42.03	13 39.12	- 0.366	20 42 04.17

NOTE.—The semidiameter for mean noon may be assumed the same as that for apparent noon.
The sign + prefixed to the hourly change of declination indicates that south declinations are decreasing.

Diff. for 1 Hour.
+ 9.8565".
(Table III.)

AT GREENWICH MEAN NOON.								
Day of the Month.	Day of the Year.	THE SUN'S				Logarithm of the Radius Vector of the Earth.	Diff. for 1 Hour.	Mean Time of Sidereal Noon.
		TRUE LONGITUDE.		Diff. for 1 Hour.	LATITUDE.			
		λ	λ'					
1	1	279 55 10.8	55 04.0	+152.95	+ 0.28	9.992 6806	- 1.9	h m s 5 19 16.62
2	2	280 56 21.6	56 14.6	152.95	0.22	9.992 6768	1.2	5 15 20.71
3	3	281 57 32.2	57 25.1	152.94	0.14	9.992 6749	- 0.4	5 11 24.80
4	4	282 58 42.6	58 35.3	+152.93	+ 0.05	9.992 6748	+ 0.4	5 07 28.90
5	5	283 59 52.7	59 45.2	152.92	- 0.07	9.992 6767	1.2	5 03 32.98
6	6	285 01 02.4	00 54.8	152.90	0.21	9.992 6807	2.1	4 59 37.07
7	7	286 02 11.7	02 03.9	+152.88	- 0.34	9.992 6869	+ 3.1	4 55 41.16
8	8	287 03 20.5	03 12.5	152.86	0.47	9.992 6954	4.1	4 51 45.24
9	9	288 04 28.8	04 20.7	152.84	0.59	9.992 7064	5.1	4 47 49.33
10	10	289 05 36.5	05 28.3	+152.81	- 0.69	9.992 7201	+ 6.2	4 43 53.42
11	11	290 06 43.8	06 35.4	152.79	0.78	9.992 7365	7.4	4 39 57.51
12	12	291 07 50.6	07 42.0	152.77	0.83	9.992 7557	8.6	4 36 01.60
13	13	292 08 56.9	08 48.2	+152.76	- 0.85	9.992 7778	+ 9.8	4 32 05.69
14	14	293 10 02.8	09 53.9	152.74	0.84	9.992 8029	11.0	4 28 09.78
15	15	294 11 08.4	10 59.3	152.72	0.79	9.992 8308	12.2	4 24 13.87
16	16	295 12 13.6	12 04.4	+152.71	- 0.71	9.992 8616	+ 13.4	4 20 17.96
17	17	296 13 18.5	13 09.1	152.70	0.62	9.992 8950	14.5	4 16 22.05
18	18	297 14 23.1	14 13.6	152.69	0.50	9.992 9311	15.5	4 12 26.14
19	19	298 15 27.4	15 17.8	+152.67	- 0.37	9.992 9695	+ 16.5	4 08 30.23
20	20	299 16 31.4	16 21.6	152.66	0.25	9.993 0103	17.4	4 04 34.32
21	21	300 17 35.0	17 25.0	152.64	0.13	9.993 0532	18.3	4 00 38.41
22	22	301 18 38.2	18 28.1	+152.62	- 0.01	9.993 0981	+ 19.1	3 56 42.50
23	23	302 19 40.9	19 30.6	152.60	+ 0.09	9.993 1449	19.9	3 52 46.59
24	24	303 20 43.0	20 32.7	152.58	0.17	9.993 1935	20.6	3 48 50.68
25	25	304 21 44.6	21 34.1	+152.55	+ 0.22	9.993 2438	+ 21.3	3 44 54.77
26	26	305 22 45.4	22 34.8	152.52	0.24	9.993 2957	22.0	3 40 58.86
27	27	306 23 45.5	23 34.7	152.49	0.24	9.993 3492	22.6	3 37 02.95
28	28	307 24 44.8	24 33.8	+152.45	+ 0.22	9.993 4042	+ 23.2	3 33 07.04
29	29	308 25 43.1	25 32.0	152.41	0.17	9.993 4607	23.8	3 29 11.13
30	30	309 26 40.4	26 29.2	152.37	0.10	9.993 5186	24.4	3 25 15.22
31	31	310 27 36.6	27 25.3	152.32	+ 0.01	9.993 5780	25.0	3 21 19.31
32	32	311 28 31.6	28 20.2	+152.27	- 0.10	9.993 6389	+ 25.7	3 17 23.40
NOTE.—The longitudes in the column λ are referred to the true equinox of their own date, while those in the column λ' are referred to the mean equinox of the beginning of the Besselian fictitious year.								Diff. for 1 Hour, —9.8296". (Table II.)

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month.									
	SEMI- DIAMETER.		HORIZONTAL PARALLAX.				UPPER TRANSIT.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 Hour.	Midnight.	Diff. for 1 Hour.	Meridian of Greenwich.	Diff. for 1 Hour.	Noon.
	"	"	"	"	"	"	h m	m	d
1	14 48.2	14 50.4	54 13.8	+ 0.61	54 21.9	+ 0.74	2 01.6	+ 1.88	2.6
2	14 53.0	14 56.1	54 31.6	0.87	54 42.9	1.01	2 46.4	1.86	3.6
3	14 59.7	15 03.7	54 55.9	1.16	55 10.7	1.31	3 30.7	1.85	4.6
4	15 08.2	15 13.3	55 27.4	+ 1.46	55 45.9	+ 1.62	4 15.1	+ 1.86	5.6
5	15 18.8	15 24.8	56 06.2	1.77	56 28.3	1.91	5 00.2	1.91	6.6
6	15 31.3	15 38.2	56 52.0	2.04	57 17.2	2.14	5 46.8	1.99	7.6
7	15 45.4	15 52.8	57 43.6	+ 2.23	58 10.8	+ 2.28	6 35.9	+ 2.11	8.6
8	16 00.3	16 07.8	58 38.5	2.30	59 06.1	2.27	7 28.1	2.25	9.6
9	16 15.2	16 22.1	59 33.0	2.19	59 58.6	2.05	8 24.1	2.41	10.6
10	16 28.5	16 34.2	60 22.1	+ 1.85	60 42.9	+ 1.59	9 23.5	+ 2.54	11.6
11	16 39.0	16 42.6	61 00.3	1.28	61 13.6	0.91	10 25.4	2.61	12.6
12	16 45.0	16 46.0	61 22.3	+ 0.52	61 26.0	+ 0.10	11 28.3	2.60	13.6
13	16 45.6	16 43.8	61 24.6	- 0.33	61 18.0	- 0.75	12 30.1	+ 2.52	14.6
14	16 40.6	16 36.3	61 06.5	1.15	60 50.4	1.51	13 29.3	2.40	15.6
15	16 30.8	16 24.4	60 30.3	1.82	60 06.8	2.07	14 25.2	2.26	16.6
16	16 17.2	16 09.6	59 40.6	- 2.26	59 12.6	- 2.39	15 18.0	+ 2.14	17.6
17	16 01.6	15 53.5	58 43.3	2.45	58 13.6	2.47	16 08.1	2.05	18.6
18	15 45.5	15 37.6	57 44.1	2.43	57 15.3	2.35	16 56.5	1.99	19.6
19	15 30.1	15 23.0	56 47.7	- 2.23	56 21.6	- 2.09	17 43.8	+ 1.96	20.6
20	15 16.4	15 10.4	55 57.4	1.93	55 35.2	1.75	18 30.6	1.95	21.6
21	15 05.0	15 00.2	55 15.3	1.56	54 57.7	1.37	19 17.3	1.95	22.6
22	14 56.0	14 52.5	54 42.5	- 1.17	54 29.6	- 0.98	20 04.4	+ 1.97	23.6
23	14 49.6	14 47.3	54 19.0	0.79	54 10.6	0.60	20 51.7	1.98	24.6
24	14 45.6	14 44.4	54 04.3	0.44	54 00.1	- 0.27	21 39.1	1.97	25.6
25	14 43.8	14 43.6	53 57.7	- 0.12	53 57.1	+ 0.02	22 26.4	+ 1.96	26.6
26	14 43.9	14 44.6	53 58.2	+ 0.15	54 00.7	0.27	23 13.2	1.94	27.6
27	14 45.7	14 47.1	54 04.6	0.38	54 09.9	0.48	23 59.4	1.91	28.6
28	14 48.9	14 50.9	54 16.3	+ 0.58	54 23.8	+ 0.67	δ		29.6
29	14 53.2	14 55.9	54 32.4	0.75	54 42.0	0.84	0 44.9	+ 1.88	0.8
30	14 58.8	15 01.9	54 52.6	0.92	55 04.2	1.01	1 29.7	1.86	1.8
31	15 05.4	15 09.1	55 16.8	1.09	55 30.5	1.18	2 14.3	1.86	2.8
32	15 13.1	15 17.4	55 45.2	+ 1.27	56 00.9	+ 1.35	2 59.2	+ 1.89	3.8

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
THURSDAY 1.					SATURDAY 3.				
0	20 37 46.24	+ 1.9913	S. 13 34 00.7	+ 6.840	0	22 12 11.44	+ 1.9526	S. 7 04 54.2	+ 9.173
1	20 39 45.68	1.9901	13 27 08.5	6.900	1	22 14 08.59	1.9526	6 55 42.7	9.209
2	20 41 45.05	1.9888	13 20 12.7	6.960	2	22 16 05.75	1.9526	6 46 29.1	9.244
3	20 43 44.34	1.9875	13 13 13.3	7.020	3	22 18 02.90	1.9525	6 37 13.4	9.278
4	20 45 43.55	1.9862	13 06 10.3	7.078	4	22 20 00.05	1.9526	6 27 55.7	9.313
5	20 47 42.69	1.9850	12 59 03.9	7.137	5	22 21 57.21	1.9526	6 18 35.9	9.346
6	20 49 41.75	1.9837	12 51 53.9	7.196	6	22 23 54.37	1.9527	6 09 14.2	9.378
7	20 51 40.73	1.9825	12 44 40.4	7.253	7	22 25 51.54	1.9530	5 59 50.5	9.411
8	20 53 39.65	1.9813	12 37 23.5	7.310	8	22 27 48.73	1.9532	5 50 24.9	9.443
9	20 55 38.49	1.9802	12 30 03.2	7.367	9	22 29 45.92	1.9533	5 40 57.4	9.473
10	20 57 37.27	1.9790	12 22 39.5	7.423	10	22 31 43 13	1.9537	5 31 28.1	9.504
11	20 59 35.97	1.9778	12 15 12.4	7.479	11	22 33 40.37	1.9541	5 21 56.9	9.534
12	21 01 34.60	1.9767	12 07 42.0	7.534	12	22 35 37.62	1.9544	5 12 24.0	9.563
13	21 03 33.17	1.9756	12 00 08.3	7.588	13	22 37 34.90	1.9548	5 02 49.3	9.593
14	21 05 31.67	1.9744	11 52 31.4	7.643	14	22 39 32.20	1.9552	4 53 12.9	9.621
15	21 07 30.10	1.9733	11 44 51.2	7.697	15	22 41 29.53	1.9558	4 43 34.8	9.648
16	21 09 28.47	1.9723	11 37 07.8	7.750	16	22 43 26.90	1.9564	4 33 55.1	9.675
17	21 11 26.77	1.9713	11 29 21.2	7.803	17	22 45 24.30	1.9569	4 24 13.8	9.702
18	21 13 25.02	1.9703	11 21 31.5	7.854	18	22 47 21.73	1.9576	4 14 30.9	9.728
19	21 15 23.20	1.9693	11 13 38.7	7.906	19	22 49 19.21	1.9583	4 04 46.5	9.753
20	21 17 21.33	1.9683	11 05 42.8	7.958	20	22 51 16.73	1.9590	3 55 00.5	9.778
21	21 19 19.40	1.9673	10 57 43.8	8.008	21	22 53 14.29	1.9597	3 45 13.1	9.802
22	21 21 17.41	1.9664	10 49 41.8	8.058	22	22 55 11.90	1.9606	3 35 24.3	9.825
23	21 23 15.37	+ 1.9655	S. 10 41 36.8	+ 8.108	23	22 57 09.56	+ 1.9615	S. 3 25 34.1	+ 9.848
FRIDAY 2.					SUNDAY 4.				
0	21 25 13.27	+ 1.9646	S. 10 33 28.9	+ 8.156	0	22 59 07.28	+ 1.9624	S. 3 15 42.5	+ 9.871
1	21 27 11.12	1.9637	10 25 18.1	8.205	1	23 01 05.05	1.9634	3 05 49.6	9.893
2	21 29 08.92	1.9630	10 17 04.3	8.253	2	23 03 02.89	1.9645	2 55 55.4	9.914
3	21 31 06.68	1.9622	10 08 47.7	8.300	3	23 05 00.79	1.9655	2 45 59.9	9.935
4	21 33 04.38	1.9613	10 00 28.3	8.348	4	23 06 58.75	1.9666	2 36 03.2	9.954
5	21 35 02.04	1.9607	9 52 06.0	8.394	5	23 08 56.78	1.9677	2 26 05.4	9.973
6	21 36 59.66	1.9599	9 43 41.0	8.439	6	23 10 54.88	1.9690	2 16 06.4	9.992
7	21 38 57.23	1.9593	9 35 13.3	8.484	7	23 12 53.06	1.9702	2 06 06.3	10.010
8	21 40 54.77	1.9586	9 26 42.9	8.529	8	23 14 51.31	1.9715	1 56 05.2	10.028
9	21 42 52.26	1.9579	9 18 09.8	8.574	9	23 16 49.64	1.9729	1 46 03.0	10.045
10	21 44 49.72	1.9574	9 09 34.0	8.618	10	23 18 48.06	1.9743	1 35 59.8	10.061
11	21 46 47.15	1.9568	9 00 55.7	8.661	11	23 20 46.56	1.9757	1 25 55.7	10.076
12	21 48 44.54	1.9563	8 52 14.7	8.704	12	23 22 45.15	1.9772	1 15 50.7	10.091
13	21 50 41.90	1.9558	8 43 31.2	8.746	13	23 24 43.83	1.9788	1 05 44.8	10.105
14	21 52 39.23	1.9553	8 34 45.2	8.788	14	23 26 42.61	1.9805	0 55 38.1	10.119
15	21 54 36.54	1.9549	8 25 56.7	8.828	15	23 28 41.49	1.9822	0 45 30.5	10.132
16	21 56 33.82	1.9545	8 17 05.8	8.869	16	23 30 40.47	1.9839	0 35 22.2	10.144
17	21 58 31.08	1.9542	8 08 12.4	8.909	17	23 32 39.56	1.9857	0 25 13.2	10.156
18	22 00 28.32	1.9538	7 59 16.7	8.948	18	23 34 38.75	1.9874	0 15 03.5	10.167
19	22 02 25.54	1.9535	7 50 18.7	8.987	19	23 36 38.05	1.9892	S. 0 04 53.2	10.178
20	22 04 22.74	1.9532	7 41 18.3	9.026	20	23 38 37.46	1.9912	N. 0 05 17.8	10.188
21	22 06 19.93	1.9531	7 32 15.6	9.063	21	23 40 37.00	1.9933	0 15 29.3	10.196
22	22 08 17.11	1.9529	7 23 10.7	9.101	22	23 42 36.65	1.9952	0 25 41.3	10.204
23	22 10 14.28	1.9527	7 14 03.5	9.138	23	23 44 36.43	1.9973	0 35 53.8	10.212
24	22 12 11.44	+ 1.9526	S. 7 04 54.2	+ 9.173	24	23 46 36.33	+ 1.9994	N. 0 46 06.7	+ 10.219

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
MONDAY 5.					WEDNESDAY 7.				
0	h m s	s	N. ° ' "	"	0	h m s	s	N. ° ' "	"
0	23 46 36.33	+ 1.9994	0 46 06.7	+ 10.219	0	1 26 05.02	+ 2.1662	8 50 12.3	+ 9.628
1	23 48 36.36	2.0017	0 56 20.1	10.226	1	1 28 15.13	2.1709	8 59 49.0	9.593
2	23 50 36.53	2.0039	1 06 33.8	10.231	2	1 30 25.53	2.1757	9 09 23.5	9.558
3	23 52 36.83	2.0062	1 16 47.8	10.236	3	1 32 36.22	2.1806	9 18 55.9	9.522
4	23 54 37.27	2.0086	1 27 02.1	10.240	4	1 34 47.20	2.1855	9 28 26.1	9.484
5	23 56 37.86	2.0110	1 37 16.6	10.243	5	1 36 58.48	2.1904	9 37 54.0	9.446
6	23 58 38.59	2.0135	1 47 31.3	10.247	6	1 39 10.05	2.1954	9 47 19.6	9.406
7	0 00 39.48	2.0160	1 57 46.2	10.248	7	1 41 21.93	2.2004	9 56 42.7	9.365
8	0 02 40.51	2.0185	2 08 01.1	10.249	8	1 43 34.10	2.2054	10 06 03.4	9.323
9	0 04 41.70	2.0212	2 18 16.1	10.250	9	1 45 46.58	2.2106	10 15 21.5	9.280
10	0 06 43.06	2.0239	2 28 31.1	10.250	10	1 47 59.37	2.2157	10 24 37.0	9.237
11	0 08 44.57	2.0266	2 38 46.1	10.249	11	1 50 12.47	2.2209	10 33 49.9	9.192
12	0 10 46.25	2.0294	2 49 01.0	10.248	12	1 52 25.88	2.2262	10 43 00.0	9.145
13	0 12 48.10	2.0322	2 59 15.8	10.245	13	1 54 39.61	2.2314	10 52 07.3	9.098
14	0 14 50.12	2.0352	3 09 30.4	10.241	14	1 56 53.65	2.2367	11 01 11.7	9.049
15	0 16 52.32	2.0381	3 19 44.7	10.237	15	1 59 08.01	2.2420	11 10 13.2	8.999
16	0 18 54.69	2.0411	3 29 58.8	10.233	16	2 01 22.69	2.2474	11 19 11.6	8.948
17	0 20 57.25	2.0442	3 40 12.6	10.228	17	2 03 37.70	2.2529	11 28 07.0	8.897
18	0 23 00.00	2.0473	3 50 26.1	10.221	18	2 05 53.04	2.2583	11 36 59.2	8.843
19	0 25 02.93	2.0505	4 00 39.1	10.213	19	2 08 08.70	2.2637	11 45 48.2	8.789
20	0 27 06.06	2.0537	4 10 51.7	10.206	20	2 10 24.69	2.2692	11 54 33.9	8.734
21	0 29 09.38	2.0570	4 21 03.8	10.197	21	2 12 41.01	2.2747	12 03 16.3	8.677
22	0 31 12.90	2.0604	4 31 15.3	10.188	22	2 14 57.66	2.2803	12 11 55.2	8.619
23	0 33 16.63	+ 2.0638	N. 4 41 26.3	+ 10.178	23	2 17 14.65	+ 2.2859	N. 12 20 30.6	+ 8.561
TUESDAY 6.					THURSDAY 8.				
0	0 35 20.56	+ 2.0673	N. 4 51 36.6	+ 10.166	0	2 19 31.97	+ 2.2915	N. 12 29 02.5	+ 8.501
1	0 37 24.70	2.0707	5 01 46.2	10.154	1	2 21 49.63	2.2972	12 37 30.7	8.439
2	0 39 29.05	2.0743	5 11 55.0	10.140	2	2 24 07.63	2.3029	12 45 55.2	8.377
3	0 41 33.62	2.0780	5 22 03.0	10.127	3	2 26 25.98	2.3086	12 54 15.9	8.313
4	0 43 38.41	2.0817	5 32 10.2	10.113	4	2 28 44.66	2.3142	13 02 32.7	8.248
5	0 45 43.42	2.0853	5 42 16.5	10.097	5	2 31 03.69	2.3200	13 10 45.6	8.182
6	0 47 48.65	2.0891	5 52 21.8	10.080	6	2 33 23.06	2.3257	13 18 54.5	8.114
7	0 49 54.11	2.0930	6 02 26.1	10.063	7	2 35 42.77	2.3315	13 26 59.3	8.045
8	0 51 59.81	2.0969	6 12 29.4	10.045	8	2 38 02.84	2.3373	13 34 59.9	7.975
9	0 54 05.74	2.1009	6 22 31.5	10.026	9	2 40 23.25	2.3431	13 42 56.3	7.904
10	0 56 11.91	2.1048	6 32 32.5	10.007	10	2 42 44.01	2.3488	13 50 48.4	7.832
11	0 58 18.32	2.1088	6 42 32.3	9.985	11	2 45 05.11	2.3547	13 58 36.1	7.758
12	1 00 24.97	2.1129	6 52 30.7	9.963	12	2 47 26.57	2.3606	14 06 19.3	7.683
13	1 02 31.87	2.1171	7 02 27.8	9.941	13	2 49 48.38	2.3663	14 13 58.0	7.607
14	1 04 39.02	2.1213	7 12 23.6	9.918	14	2 52 10.53	2.3722	14 21 32.1	7.528
15	1 06 46.43	2.1256	7 22 17.9	9.893	15	2 54 33.04	2.3781	14 29 01.4	7.449
16	1 08 54.09	2.1298	7 32 10.7	9.868	16	2 56 55.90	2.3838	14 36 26.0	7.370
17	1 11 02.01	2.1342	7 42 02.0	9.841	17	2 59 19.10	2.3897	14 43 45.8	7.289
18	1 13 10.20	2.1387	7 51 51.6	9.813	18	3 01 42.66	2.3956	14 51 00.7	7.206
19	1 15 18.66	2.1432	8 01 39.6	9.785	19	3 04 06.57	2.4014	14 58 10.5	7.122
20	1 17 27.38	2.1476	8 11 25.8	9.756	20	3 06 30.83	2.4072	15 05 15.3	7.037
21	1 19 36.37	2.1522	8 21 10.3	9.726	21	3 08 55.44	2.4131	15 12 15.0	6.951
22	1 21 45.64	2.1568	8 30 52.9	9.694	22	3 11 20.40	2.4189	15 19 09.4	6.862
23	1 23 55.19	2.1615	8 40 33.6	9.662	23	3 13 45.71	2.4247	15 25 58.5	6.773
24	1 26 05.02	+ 2.1662	N. 8 50 12.3	+ 9.628	24	3 16 11.36	+ 2.4304	N. 15 32 42.2	+ 6.683

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
FRIDAY 9.					SUNDAY 11.				
0	h m s	"	"	"	0	h m s	"	"	"
1	3 16 11.36	+ 2.4304	N. 15 32 42.2	+ 6.683	1	5 18 45.37	+ 2.6595	N. 18 47 02.4	+ 1.019
2	3 18 37.36	2.4362	15 39 20.5	6.592	2	5 21 24.48	2.6530	18 47 59.4	0.880
3	3 21 03.71	2.4421	15 45 53.3	6.499	3	5 24 03.73	2.6553	18 48 48.0	0.741
4	3 23 30.41	2.4478	15 52 20.4	6.405	4	5 26 43.12	2.6577	18 49 28.3	0.601
5	3 25 57.45	2.4535	15 58 41.9	6.310	5	5 29 22.65	2.6598	18 50 00.1	0.460
6	3 28 24.83	2.4592	16 04 57.6	6.213	6	5 32 02.30	2.6618	18 50 23.5	0.319
7	3 30 52.55	2.4648	16 11 07.4	6.115	7	5 34 42.07	2.6637	18 50 38.4	0.178
8	3 33 20.61	2.4705	16 17 11.4	6.017	8	5 37 21.95	2.6656	18 50 44.9	+ 0.037
9	3 35 49.01	2.4761	16 23 09.4	5.916	9	5 40 01.94	2.6672	18 50 42.8	- 0.106
10	3 38 17.74	2.4817	16 29 01.3	5.815	10	5 42 42.02	2.6687	18 50 32.2	0.248
11	3 40 46.81	2.4872	16 34 47.2	5.713	11	5 45 22.19	2.6702	18 50 13.1	0.390
12	3 43 16.21	2.4927	16 40 26.8	5.608	12	5 48 02.45	2.6716	18 49 45.4	0.533
13	3 45 45.94	2.4982	16 46 00.1	5.503	13	5 50 42.78	2.6728	18 49 09.2	0.675
14	3 48 16.00	2.5037	16 51 27.1	5.396	14	5 53 23.18	2.6738	18 48 24.4	0.818
15	3 50 46.38	2.5090	16 56 47.6	5.288	15	5 56 03.64	2.6747	18 47 31.1	0.960
16	3 53 17.08	2.5143	17 02 01.7	5.180	16	5 58 44.15	2.6755	18 46 29.2	1.103
17	3 55 48.10	2.5197	17 07 09.2	5.070	17	6 01 24.70	2.6762	18 45 18.7	1.247
18	3 58 19.44	2.5249	17 12 10.1	4.958	18	6 04 05.29	2.6767	18 43 59.6	1.389
19	4 00 51.09	2.5301	17 17 04.2	4.846	19	6 06 45.91	2.6772	18 42 32.0	1.532
20	4 03 23.05	2.5353	17 21 51.6	4.733	20	6 09 26.56	2.6776	18 40 55.8	1.675
21	4 05 55.32	2.5403	17 26 32.1	4.618	21	6 12 07.22	2.6777	18 39 11.0	1.818
22	4 08 27.89	2.5453	17 31 05.7	4.503	22	6 14 47.88	2.6777	18 37 17.7	1.959
23	4 11 00.76	2.5502	17 35 32.4	4.386	23	6 17 28.55	2.6777	18 35 15.9	2.102
24	4 13 33.92	+ 2.5551	N. 17 39 52.0	+ 4.268	24	6 20 09.21	+ 2.6775	N. 18 33 05.5	- 2.244
SATURDAY 10.					MONDAY 12.				
0	4 16 07.37	+ 2.5599	N. 17 44 04.6	+ 4.150	0	6 22 49.85	+ 2.6772	N. 18 30 46.6	- 2.386
1	4 18 41.11	2.5647	17 48 10.0	4.029	1	6 25 30.47	2.6767	18 28 19.2	2.527
2	4 21 15.14	2.5695	17 52 08.1	3.908	2	6 28 11.06	2.6762	18 25 43.4	2.668
3	4 23 49.45	2.5741	17 55 58.9	3.786	3	6 30 51.61	2.6754	18 22 59.1	2.808
4	4 26 24.03	2.5786	17 59 42.4	3.663	4	6 33 32.11	2.6746	18 20 06.4	2.948
5	4 28 58.88	2.5830	18 03 18.4	3.538	5	6 36 12.56	2.6737	18 17 05.3	3.088
6	4 31 33.99	2.5874	18 06 46.9	3.413	6	6 38 52.95	2.6727	18 13 55.8	3.228
7	4 34 09.37	2.5917	18 10 07.9	3.287	7	6 41 33.28	2.6715	18 10 37.9	3.367
8	4 36 45.00	2.5959	18 13 21.3	3.160	8	6 44 13.53	2.6702	18 07 11.8	3.504
9	4 39 20.88	2.6001	18 16 27.1	3.033	9	6 46 53.70	2.6688	18 03 37.4	3.643
10	4 41 57.01	2.6042	18 19 25.2	2.903	10	6 49 33.78	2.6672	17 59 54.7	3.780
11	4 44 33.38	2.6081	18 22 15.5	2.774	11	6 52 13.77	2.6656	17 56 03.8	3.917
12	4 47 09.98	2.6119	18 24 58.0	2.643	12	6 54 53.65	2.6638	17 52 04.7	4.053
13	4 49 46.81	2.6157	18 27 32.7	2.512	13	6 57 33.42	2.6619	17 47 57.5	4.188
14	4 52 23.87	2.6194	18 29 59.4	2.379	14	7 00 13.08	2.6599	17 43 42.2	4.322
15	4 55 01.14	2.6230	18 32 18.2	2.247	15	7 02 52.61	2.6578	17 39 18.9	4.455
16	4 57 38.63	2.6265	18 34 29.0	2.113	16	7 05 32.02	2.6557	17 34 47.6	4.588
17	5 00 16.32	2.6298	18 36 31.8	1.978	17	7 08 11.29	2.6533	17 30 08.4	4.719
18	5 02 54.21	2.6331	18 38 26.4	1.843	18	7 10 50.41	2.6508	17 25 21.3	4.851
19	5 05 32.29	2.6362	18 40 12.9	1.708	19	7 13 29.39	2.6483	17 20 26.3	4.982
20	5 08 10.56	2.6393	18 41 51.3	1.572	20	7 16 08.21	2.6457	17 15 23.5	5.111
21	5 10 49.01	2.6422	18 43 21.5	1.434	21	7 18 46.87	2.6430	17 10 13.0	5.239
22	5 13 27.63	2.6451	18 44 43.4	1.297	22	7 21 25.37	2.6402	17 04 54.8	5.367
23	5 16 06.42	2.6478	18 45 57.1	1.158	23	7 24 03.69	2.6372	16 59 29.0	5.493
24	5 18 45.37	+ 2.6505	N. 18 47 02.4	+ 1.019	24	7 26 41.84	+ 2.6342	N. 16 53 55.7	- 5.618

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
TUESDAY 13.					THURSDAY 15.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
0	7 26 41.84	+ 2.6342	N. 16 53 55.7	- 5.618	0	9 28 19.04	+ 2.4167	N. 10 24 08.9	- 10.068
1	7 29 19.80	2.6311	16 48 14.9	5.743	1	9 30 43.89	2.4116	10 14 03.1	10.123
2	7 31 57.57	2.6278	16 42 26.6	5.866	2	9 33 08.43	2.4064	10 03 54.1	10.178
3	7 34 35.14	2.6245	16 36 31.0	5.988	3	9 35 32.66	2.4012	9 53 41.8	10.231
4	7 37 12.51	2.6211	16 30 28.1	6.109	4	9 37 56.58	2.3961	9 43 26.4	10.283
5	7 39 49.67	2.6176	16 24 17.9	6.229	5	9 40 20.19	2.3909	9 33 07.9	10.333
6	7 42 26.62	2.6141	16 18 00.6	6.348	6	9 42 43.49	2.3858	9 22 46.5	10.381
7	7 45 03.36	2.6105	16 11 36.2	6.465	7	9 45 06.49	2.3807	9 12 22.2	10.428
8	7 47 39.88	2.6067	16 05 04.8	6.581	8	9 47 29.18	2.3757	9 01 55.2	10.473
9	7 50 16.17	2.6029	15 58 26.5	6.696	9	9 49 51.57	2.3706	8 51 25.5	10.517
10	7 52 52.23	2.5990	15 51 41.3	6.810	10	9 52 13.65	2.3655	8 40 53.2	10.559
11	7 55 28.05	2.5950	15 44 49.3	6.923	11	9 54 35.43	2.3605	8 30 18.4	10.601
12	7 58 03.63	2.5910	15 37 50.6	7.033	12	9 56 56.91	2.3555	8 19 41.1	10.640
13	8 00 38.97	2.5869	15 30 45.3	7.143	13	9 59 18.09	2.3505	8 09 01.6	10.678
14	8 03 14.06	2.5827	15 23 33.4	7.252	14	10 01 38.97	2.3455	7 58 19.8	10.714
15	8 05 48.90	2.5785	15 16 15.0	7.359	15	10 03 59.55	2.3406	7 47 35.9	10.748
16	8 08 23.48	2.5742	15 08 50.3	7.464	16	10 06 19.84	2.3357	7 36 50.0	10.782
17	8 10 57.80	2.5698	15 01 19.3	7.569	17	10 08 39.83	2.3307	7 26 02.1	10.815
18	8 13 31.86	2.5654	14 53 42.0	7.673	18	10 10 59.53	2.3258	7 15 12.2	10.846
19	8 16 05.65	2.5610	14 45 58.6	7.774	19	10 13 18.93	2.3210	7 04 20.6	10.874
20	8 18 39.18	2.5565	14 38 09.1	7.874	20	10 15 38.05	2.3162	6 53 27.3	10.902
21	8 21 12.43	2.5518	14 30 13.7	7.973	21	10 17 56.88	2.3114	6 42 32.3	10.929
22	8 23 45.40	2.5472	14 22 12.4	8.070	22	10 20 15.42	2.3067	6 31 35.8	10.954
23	8 26 18.10	+ 2.5426	N. 14 14 05.3	- 8.167	23	10 22 33.68	+ 2.3019	N. 6 20 37.8	- 10.978
WEDNESDAY 14.					FRIDAY 16.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
0	8 28 50.51	+ 2.5378	N. 14 05 52.4	- 8.262	0	10 24 51.65	+ 2.2972	N. 6 09 38.4	- 11.001
1	8 31 22.64	2.5331	13 57 33.9	8.353	1	10 27 09.35	2.2927	5 58 37.7	11.022
2	8 33 54.48	2.5282	13 49 10.0	8.444	2	10 29 26.77	2.2880	5 47 35.8	11.041
3	8 36 26.03	2.5235	13 40 40.6	8.535	3	10 31 43.91	2.2834	5 36 32.8	11.059
4	8 38 57.30	2.5187	13 32 05.8	8.623	4	10 34 00.78	2.2789	5 25 28.7	11.076
5	8 41 28.27	2.5137	13 23 25.8	8.710	5	10 36 17.38	2.2744	5 14 23.7	11.092
6	8 43 58.94	2.5087	13 14 40.6	8.796	6	10 38 33.71	2.2699	5 03 17.7	11.107
7	8 46 29.31	2.5037	13 05 50.3	8.880	7	10 40 49.77	2.2655	4 52 10.9	11.120
8	8 48 59.39	2.4987	12 56 55.0	8.962	8	10 43 05.57	2.2611	4 41 03.3	11.133
9	8 51 29.17	2.4937	12 47 54.9	9.042	9	10 45 21.10	2.2567	4 29 55.0	11.143
10	8 53 58.64	2.4887	12 38 50.0	9.122	10	10 47 36.38	2.2525	4 18 46.2	11.152
11	8 56 27.81	2.4837	12 29 40.3	9.200	11	10 49 51.40	2.2482	4 07 36.8	11.161
12	8 58 56.68	2.4786	12 20 26.0	9.276	12	10 52 06.16	2.2439	3 56 26.9	11.168
13	9 01 25.24	2.4734	12 11 07.2	9.350	13	10 54 20.67	2.2397	3 45 16.7	11.173
14	9 03 53.49	2.4683	12 01 44.0	9.423	14	10 56 34.93	2.2357	3 34 06.2	11.178
15	9 06 21.44	2.4632	11 52 16.5	9.494	15	10 58 48.95	2.2316	3 22 55.4	11.181
16	9 08 49.08	2.4581	11 42 44.7	9.564	16	11 01 02.72	2.2275	3 11 44.5	11.183
17	9 11 16.41	2.4529	11 33 08.8	9.633	17	11 03 16.25	2.2235	3 00 33.5	11.183
18	9 13 43.43	2.4477	11 23 28.8	9.700	18	11 05 29.54	2.2196	2 49 22.5	11.183
19	9 16 10.14	2.4426	11 13 44.8	9.765	19	11 07 42.60	2.2157	2 38 11.5	11.183
20	9 18 36.54	2.4374	11 03 57.0	9.828	20	11 09 55.42	2.2117	2 27 00.6	11.180
21	9 21 02.63	2.4322	10 54 05.4	9.890	21	11 12 08.01	2.2079	2 15 49.9	11.177
22	9 23 28.41	2.4271	10 44 10.2	9.951	22	11 14 20.37	2.2042	2 04 39.4	11.173
23	9 25 53.88	2.4219	10 34 11.3	10.011	23	11 16 32.51	2.2005	1 53 29.2	11.167
24	9 28 19.04	+ 2.4167	N. 10 24 08.9	- 10.068	24	11 18 44.43	+ 2.1968	N. 1 42 19.4	- 11.159

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
SATURDAY 17.					MONDAY 19.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
0	11 18 44.43	+ 2.1968	N. 1 42 19.4	-11.159	0	13 00 51.58	+ 2.0765	S. 6 47 40.5	-9.778
1	11 20 56.13	2.1932	1 31 10.1	11.158	1	13 02 56.13	2.0752	6 57 25.8	9.732
2	11 23 07.61	2.1895	1 20 01.2	11.143	2	13 05 00.60	2.0738	7 07 08.3	9.685
3	11 25 18.87	2.1860	1 08 52.9	11.133	3	13 07 04.99	2.0725	7 16 48.0	9.637
4	11 27 29.93	2.1825	0 57 45.3	11.121	4	13 09 09.30	2.0713	7 26 24.8	9.588
5	11 29 40.77	2.1790	0 46 38.4	11.109	5	13 11 13.54	2.0701	7 35 58.6	9.539
6	11 31 51.41	2.1757	0 35 32.2	11.097	6	13 13 17.71	2.0689	7 45 29.5	9.490
7	11 34 01.85	2.1723	0 24 26.8	11.083	7	13 15 21.81	2.0678	7 54 57.4	9.439
8	11 36 12.09	2.1691	0 13 22.3	11.068	8	13 17 25.84	2.0667	8 04 22.2	9.388
9	11 38 22.14	2.1658	N. 0 02 18.7	11.052	9	13 19 29.81	2.0657	8 13 44.0	9.337
10	11 40 31.99	2.1626	S. 0 08 43.9	11.035	10	13 21 33.72	2.0647	8 23 02.7	9.285
11	11 42 41.65	2.1594	0 19 45.5	11.018	11	13 23 37.57	2.0637	8 32 18.2	9.232
12	11 44 51.12	2.1563	0 30 46.0	10.998	12	13 25 41.36	2.0628	8 41 30.6	9.180
13	11 47 00.41	2.1532	0 41 45.3	10.978	13	13 27 45.10	2.0619	8 50 39.8	9.127
14	11 49 09.51	2.1502	0 52 43.4	10.958	14	13 29 48.79	2.0610	8 59 45.8	9.073
15	11 51 18.44	2.1473	1 03 40.2	10.936	15	13 31 52.42	2.0602	9 08 48.5	9.018
16	11 53 27.19	2.1443	1 14 35.7	10.913	16	13 33 56.01	2.0594	9 17 47.9	8.963
17	11 55 35.76	2.1415	1 25 29.8	10.890	17	13 35 59.55	2.0587	9 26 44.0	8.908
18	11 57 44.17	2.1388	1 36 22.5	10.866	18	13 38 03.05	2.0579	9 35 36.8	8.852
19	11 59 52.41	2.1359	1 47 13.7	10.841	19	13 40 06.50	2.0573	9 44 26.2	8.795
20	12 02 00.48	2.1332	1 58 03.4	10.815	20	13 42 09.92	2.0567	9 53 12.2	8.738
21	12 04 08.40	2.1306	2 08 51.5	10.788	21	13 44 13.30	2.0560	10 01 54.8	8.681
22	12 06 16.15	2.1279	2 19 37.9	10.760	22	13 46 16.64	2.0554	10 10 33.9	8.623
23	12 08 23.75	+ 2.1254	S. 2 30 22.7	-10.732	23	13 48 19.95	+ 2.0549	S. 10 19 09.5	-8.565
SUNDAY 18.					TUESDAY 20.				
0	12 10 31.20	+ 2.1229	S. 2 41 05.7	-10.702	0	13 50 23.23	+ 2.0544	S. 10 27 41.7	-8.507
1	12 12 38.50	2.1204	2 51 46.9	10.672	1	13 52 26.48	2.0539	10 36 10.3	8.446
2	12 14 45.65	2.1180	3 02 26.3	10.642	2	13 54 29.70	2.0535	10 44 35.2	8.386
3	12 16 52.66	2.1156	3 13 03.9	10.610	3	13 56 32.90	2.0532	10 52 56.6	8.326
4	12 18 59.52	2.1133	3 23 39.5	10.578	4	13 58 36.08	2.0528	11 01 14.3	8.265
5	12 21 06.25	2.1111	3 34 13.2	10.544	5	14 00 39.23	2.0523	11 09 28.4	8.204
6	12 23 12.85	2.1088	3 44 44.8	10.510	6	14 02 42.36	2.0520	11 17 38.8	8.143
7	12 25 19.31	2.1066	3 55 14.4	10.476	7	14 04 45.47	2.0518	11 25 45.5	8.081
8	12 27 25.64	2.1044	4 05 41.9	10.440	8	14 06 48.57	2.0515	11 33 48.5	8.018
9	12 29 31.84	2.1023	4 16 07.2	10.403	9	14 08 51.65	2.0513	11 41 47.7	7.955
10	12 31 37.92	2.1003	4 26 30.3	10.367	10	14 10 54.72	2.0511	11 49 43.1	7.892
11	12 33 43.88	2.0983	4 36 51.2	10.329	11	14 12 57.78	2.0508	11 57 34.7	7.828
12	12 35 49.72	2.0964	4 47 09.8	10.291	12	14 15 00.82	2.0507	12 05 22.5	7.764
13	12 37 55.45	2.0945	4 57 26.1	10.252	13	14 17 03.86	2.0506	12 13 06.4	7.699
14	12 40 01.06	2.0926	5 07 40.0	10.212	14	14 19 06.89	2.0505	12 20 46.4	7.634
15	12 42 06.56	2.0908	5 17 51.5	10.172	15	14 21 09.92	2.0504	12 28 22.5	7.569
16	12 44 11.96	2.0891	5 28 00.6	10.131	16	14 23 12.94	2.0503	12 35 54.7	7.503
17	12 46 17.25	2.0873	5 38 07.2	10.088	17	14 25 15.96	2.0504	12 43 22.9	7.438
18	12 48 22.44	2.0857	5 48 11.2	10.046	18	14 27 18.99	2.0504	12 50 47.2	7.371
19	12 50 27.53	2.0840	5 58 12.7	10.003	19	14 29 22.01	2.0503	12 58 07.4	7.303
20	12 52 32.52	2.0824	6 08 11.6	9.960	20	14 31 25.03	2.0504	13 05 23.6	7.236
21	12 54 37.42	2.0809	6 18 07.9	9.916	21	14 33 28.06	2.0505	13 12 35.7	7.168
22	12 56 42.23	2.0794	6 28 01.5	9.871	22	14 35 31.09	2.0506	13 19 43.8	7.101
23	12 58 46.95	2.0779	6 37 52.4	9.825	23	14 37 34.13	2.0507	13 26 47.8	7.033
24	13 00 51.58	+ 2.0765	S. 6 47 40.5	-9.778	24	14 39 37.17	+ 2.0508	S. 13 33 47.7	-6.963

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
WEDNESDAY 21.					FRIDAY 23.				
	^h ^m ^s	^s	[°] ['] ["]	["]		^h ^m ^s	^s	[°] ['] ["]	["]
0	14 39 37.17	+ 2.0508	S. 13 33 47.7	- 6.963	0	16 18 27.49	+ 2.0699	S. 17 42 38.3	- 3.298
1	14 41 40.22	2.0509	13 40 43.4	6.894	1	16 20 31.70	2.0703	17 45 53.7	3.216
2	14 43 43.28	2.0512	13 47 35.0	6.825	2	16 22 35.93	2.0707	17 49 04.2	3.133
3	14 45 46.36	2.0513	13 54 22.4	6.755	3	16 24 40.18	2.0711	17 52 09.7	3.050
4	14 47 49.44	2.0515	14 01 05.6	6.685	4	16 26 44.46	2.0716	17 55 10.2	2.968
5	14 49 52.54	2.0518	14 07 44.6	6.614	5	16 28 48.77	2.0720	17 58 05.8	2.885
6	14 51 55.65	2.0520	14 14 19.3	6.543	6	16 30 53.10	2.0723	18 00 56.4	2.801
7	14 53 58.78	2.0523	14 20 49.7	6.472	7	16 32 57.45	2.0727	18 03 41.9	2.718
8	14 56 01.92	2.0525	14 27 15.9	6.400	8	16 35 01.82	2.0731	18 06 22.5	2.634
9	14 58 05.08	2.0528	14 33 37.7	6.328	9	16 37 06.22	2.0735	18 08 58.0	2.550
10	15 00 08.26	2.0531	14 39 55.2	6.256	10	16 39 10.64	2.0738	18 11 28.5	2.467
11	15 02 11.45	2.0534	14 46 08.4	6.183	11	16 41 15.07	2.0741	18 13 54.0	2.383
12	15 04 14.67	2.0538	14 52 17.2	6.110	12	16 43 19.53	2.0745	18 16 14.5	2.299
13	15 06 17.90	2.0541	14 58 21.6	6.037	13	16 45 24.01	2.0748	18 18 29.9	2.214
14	15 08 21.16	2.0545	15 04 21.6	5.963	14	16 47 28.51	2.0752	18 20 40.2	2.129
15	15 10 24.44	2.0548	15 10 17.2	5.890	15	16 49 33.03	2.0754	18 22 45.4	2.045
16	15 12 27.74	2.0552	15 16 08.4	5.815	16	16 51 37.56	2.0757	18 24 45.6	1.961
17	15 14 31.06	2.0556	15 21 55.1	5.741	17	16 53 42.11	2.0760	18 26 40.7	1.876
18	15 16 34.41	2.0560	15 27 37.3	5.666	18	16 55 46.68	2.0763	18 28 30.7	1.791
19	15 18 37.78	2.0563	15 33 15.0	5.591	19	16 57 51.26	2.0764	18 30 15.6	1.706
20	15 20 41.17	2.0568	15 38 48.2	5.516	20	16 59 55.85	2.0767	18 31 55.4	1.622
21	15 22 44.59	2.0573	15 44 16.9	5.440	21	17 02 00.46	2.0769	18 33 30.2	1.537
22	15 24 48.04	2.0577	15 49 41.0	5.363	22	17 04 05.08	2.0771	18 34 59.8	1.451
23	15 26 51.51	+ 2.0581	S. 15 55 00.5	- 5.288	23	17 06 09.71	+ 2.0773	S. 18 36 24.3	- 1.365
THURSDAY 22.					SATURDAY 24.				
	^h ^m ^s	^s	[°] ['] ["]	["]		^h ^m ^s	^s	[°] ['] ["]	["]
0	15 28 55.01	+ 2.0586	S. 16 00 15.5	- 5.212	0	17 08 14.35	+ 2.0774	S. 18 37 43.6	- 1.279
1	15 30 58.54	2.0590	16 05 25.9	5.134	1	17 10 19.00	2.0776	18 38 57.8	1.194
2	15 33 02.09	2.0594	16 10 31.6	5.057	2	17 12 23.66	2.0778	18 40 06.9	1.109
3	15 35 05.67	2.0599	16 15 32.7	4.980	3	17 14 28.33	2.0778	18 41 10.9	1.024
4	15 37 09.28	2.0604	16 20 29.2	4.903	4	17 16 33.00	2.0779	18 42 09.8	0.938
5	15 39 12.92	2.0609	16 25 21.0	4.824	5	17 18 37.68	2.0780	18 43 03.5	0.853
6	15 41 16.59	2.0613	16 30 08.1	4.746	6	17 20 42.36	2.0781	18 43 52.1	0.767
7	15 43 20.28	2.0618	16 34 50.5	4.668	7	17 22 47.05	2.0782	18 44 35.5	0.681
8	15 45 24.01	2.0623	16 39 28.2	4.588	8	17 24 51.74	2.0782	18 45 13.8	0.595
9	15 47 27.76	2.0628	16 44 01.1	4.509	9	17 26 56.43	2.0782	18 45 46.9	0.509
10	15 49 31.54	2.0633	16 48 29.3	4.430	10	17 29 01.12	2.0782	18 46 14.9	0.424
11	15 51 35.35	2.0638	16 52 52.7	4.351	11	17 31 05.81	2.0782	18 46 37.8	0.338
12	15 53 39.19	2.0642	16 57 11.4	4.272	12	17 33 10.50	2.0781	18 46 55.5	0.252
13	15 55 43.06	2.0648	17 01 25.3	4.192	13	17 35 15.18	2.0780	18 47 08.0	0.166
14	15 57 46.96	2.0652	17 05 34.4	4.112	14	17 37 19.86	2.0780	18 47 15.4	- 0.081
15	15 59 50.88	2.0657	17 09 38.7	4.031	15	17 39 24.54	2.0779	18 47 17.7	+ 0.005
16	16 01 54.84	2.0662	17 13 38.1	3.950	16	17 41 29.21	2.0778	18 47 14.8	0.092
17	16 03 58.82	2.0667	17 17 32.7	3.870	17	17 43 33.87	2.0776	18 47 06.7	0.178
18	16 06 02.84	2.0672	17 21 22.5	3.789	18	17 45 38.52	2.0774	18 46 53.5	0.263
19	16 08 06.88	2.0676	17 25 07.4	3.708	19	17 47 43.16	2.0773	18 46 35.2	0.348
20	16 10 10.95	2.0680	17 28 47.4	3.626	20	17 49 47.79	2.0770	18 46 11.7	0.434
21	16 12 15.04	2.0684	17 32 22.5	3.544	21	17 51 52.40	2.0768	18 45 43.1	0.519
22	16 14 19.16	2.0689	17 35 52.7	3.463	22	17 53 57.00	2.0766	18 45 09.4	0.605
23	16 16 23.31	2.0694	17 39 18.0	3.380	23	17 56 01.59	2.0763	18 44 30.5	0.691
24	16 18 27.49	+ 2.0699	S. 17 42 38.3	- 3.298	24	17 58 06.16	+ 2.0761	S. 18 43 46.5	+ 0.776

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
SUNDAY 25.					TUESDAY 27.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
1	17 58 06.16	+ 2.0761	S. 18 43 46.5	+ 0.776	1	19 37 04.10	+ 2.0411	S. 16 30 45.8	+ 4.684
2	18 00 10.72	2.0738	18 42 57.4	0.862	2	19 39 06.53	2.0400	16 26 02.5	4.759
3	18 02 15.25	2.0754	18 42 03.1	0.948	3	19 41 08.90	2.0389	16 21 14.7	4.833
4	18 04 19.77	2.0751	18 41 03.7	1.032	4	19 43 11.20	2.0378	16 16 22.5	4.908
5	18 06 24.26	2.0747	18 39 59.3	1.117	5	19 45 13.43	2.0367	16 11 25.8	4.982
6	18 08 28.73	2.0743	18 38 49.7	1.203	6	19 47 15.60	2.0356	16 06 24.7	5.055
7	18 10 33.18	2.0740	18 37 35.0	1.288	7	19 49 17.70	2.0344	16 01 19.2	5.128
8	18 12 37.61	2.0736	18 36 15.2	1.372	8	19 51 19.73	2.0333	15 56 09.4	5.200
9	18 14 42.01	2.0731	18 34 50.4	1.456	9	19 53 21.70	2.0323	15 50 55.2	5.273
10	18 16 46.38	2.0726	18 33 20.4	1.541	10	19 55 23.60	2.0311	15 45 36.6	5.346
11	18 18 50.72	2.0722	18 31 45.5	1.626	11	19 57 25.43	2.0299	15 40 13.7	5.417
12	18 20 55.04	2.0717	18 30 05.4	1.710	12	19 59 27.19	2.0288	15 34 46.6	5.488
13	18 22 59.32	2.0711	18 28 20.3	1.794	13	20 01 28.88	2.0276	15 29 15.1	5.560
14	18 25 03.57	2.0706	18 26 30.1	1.878	14	20 03 30.50	2.0264	15 23 39.4	5.629
15	18 27 07.79	2.0700	18 24 34.9	1.962	15	20 05 32.05	2.0253	15 17 59.6	5.699
16	18 29 11.97	2.0694	18 22 34.7	2.045	16	20 07 33.54	2.0242	15 12 15.5	5.769
17	18 31 16.12	2.0688	18 20 29.5	2.129	17	20 09 34.96	2.0230	15 06 27.3	5.838
18	18 33 20.23	2.0683	18 18 19.2	2.213	18	20 11 36.30	2.0218	15 00 35.0	5.907
19	18 35 24.31	2.0676	18 16 04.0	2.296	19	20 13 37.58	2.0207	14 54 38.5	5.975
20	18 37 28.34	2.0669	18 13 43.7	2.379	20	20 15 38.78	2.0195	14 48 37.9	6.043
21	18 39 32.34	2.0663	18 11 18.5	2.462	21	20 17 39.92	2.0183	14 42 33.3	6.110
22	18 41 36.30	2.0656	18 08 48.3	2.545	22	20 19 40.98	2.0171	14 36 24.7	6.177
23	18 43 40.21	2.0648	18 06 13.1	2.628	23	20 21 41.97	2.0159	14 30 12.1	6.243
24	18 45 44.08	+ 2.0642	S. 18 03 33.0	+ 2.710	24	20 23 42.89	+ 2.0148	S. 14 23 55.5	+ 6.310
MONDAY 26.					WEDNESDAY 28.				
0	18 47 47.91	+ 2.0634	S. 18 00 47.9	+ 2.792	0	20 25 43.74	+ 2.0137	S. 14 17 34.9	+ 6.376
1	18 49 51.69	2.0627	17 57 57.9	2.873	1	20 27 44.53	2.0125	14 11 10.4	6.441
2	18 51 55.43	2.0619	17 55 03.1	2.955	2	20 29 45.24	2.0113	14 04 42.0	6.505
3	18 53 59.12	2.0611	17 52 03.3	3.037	3	20 31 45.88	2.0102	13 58 09.8	6.569
4	18 56 02.76	2.0603	17 48 58.7	3.118	4	20 33 46.46	2.0091	13 51 33.7	6.633
5	18 58 06.35	2.0594	17 45 49.2	3.199	5	20 35 46.97	2.0079	13 44 53.8	6.697
6	19 00 09.89	2.0586	17 42 34.8	3.280	6	20 37 47.41	2.0068	13 38 10.1	6.759
7	19 02 13.38	2.0578	17 39 15.6	3.360	7	20 39 47.78	2.0056	13 31 22.7	6.821
8	19 04 16.82	2.0569	17 35 51.6	3.440	8	20 41 48.08	2.0045	13 24 31.6	6.883
9	19 06 20.21	2.0560	17 32 22.8	3.520	9	20 43 48.32	2.0034	13 17 36.8	6.944
10	19 08 23.54	2.0551	17 28 49.2	3.600	10	20 45 48.49	2.0023	13 10 38.3	7.006
11	19 10 26.82	2.0542	17 25 10.8	3.679	11	20 47 48.59	2.0011	13 03 36.1	7.066
12	19 12 30.04	2.0533	17 21 27.7	3.758	12	20 49 48.62	2.0000	12 56 30.4	7.125
13	19 14 33.21	2.0523	17 17 39.9	3.837	13	20 51 48.59	1.9989	12 49 21.1	7.184
14	19 16 36.32	2.0513	17 13 47.3	3.916	14	20 53 48.49	1.9978	12 42 08.3	7.243
15	19 18 39.37	2.0503	17 09 50.0	3.994	15	20 55 48.33	1.9968	12 34 51.9	7.302
16	19 20 42.36	2.0494	17 05 48.0	4.072	16	20 57 48.11	1.9958	12 27 32.1	7.359
17	19 22 45.30	2.0484	17 01 41.4	4.149	17	20 59 47.82	1.9947	12 20 08.8	7.417
18	19 24 48.17	2.0473	16 57 30.1	4.227	18	21 01 47.47	1.9937	12 12 42.1	7.473
19	19 26 50.98	2.0463	16 53 14.2	4.303	19	21 03 47.06	1.9926	12 05 12.0	7.530
20	19 28 53.73	2.0453	16 48 53.7	4.380	20	21 05 46.58	1.9916	11 57 38.5	7.585
21	19 30 56.42	2.0443	16 44 28.6	4.457	21	21 07 46.05	1.9907	11 50 01.8	7.640
22	19 32 59.04	2.0432	16 39 58.9	4.533	22	21 09 45.46	1.9896	11 42 21.7	7.696
23	19 35 01.60	2.0422	16 35 24.6	4.609	23	21 11 44.80	1.9886	11 34 38.3	7.750
24	19 37 04.10	+ 2.0411	S. 16 30 45.8	+ 4.684	24	21 13 44.09	+ 1.9877	S. 11 26 51.7	+ 7.803

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
THURSDAY 29.					SATURDAY 31.				
	<div>h m s</div>	<div>s</div>	<div>° ' "</div>	<div>"</div>		<div>h m s</div>	<div>s</div>	<div>° ' "</div>	<div>"</div>
0	21 13 44.09	+ 1.9877	S. 11 26 51.7	+ 7.803	0	22 48 25.84	+ 1.9681	S. 4 21 31.4	+ 9.689
1	21 15 43.32	1.9868	11 19 01.9	7.856	1	22 50 23.93	1.9684	4 11 49.3	9.713
2	21 17 42.50	1.9858	11 11 09.0	7.908	2	22 52 22.05	1.9688	4 02 05.8	9.737
3	21 19 41.62	1.9849	11 03 13.0	7.960	3	22 54 20.18	1.9691	3 52 20.9	9.759
4	21 21 40.69	1.9840	10 55 13.8	8.012	4	22 56 18.34	1.9696	3 42 34.7	9.781
5	21 23 39.70	1.9831	10 47 11.6	8.062	5	22 58 16.53	1.9701	3 32 47.2	9.803
6	21 25 38.66	1.9823	10 39 06.4	8.113	6	23 00 14.75	1.9706	3 22 58.4	9.823
7	21 27 37.57	1.9814	10 30 58.1	8.162	7	23 02 13.00	1.9712	3 13 08.3	9.844
8	21 29 36.43	1.9806	10 22 46.9	8.211	8	23 04 11.29	1.9718	3 03 17.1	9.863
9	21 31 35.24	1.9798	10 14 32.8	8.259	9	23 06 09.61	1.9723	2 53 24.7	9.882
10	21 33 34.00	1.9790	10 06 15.8	8.308	10	23 08 07.97	1.9730	2 43 31.2	9.901
11	21 35 32.72	1.9783	9 57 55.9	8.356	11	23 10 06.37	1.9737	2 33 36.6	9.918
12	21 37 31.39	1.9775	9 49 33.1	8.403	12	23 12 04.81	1.9744	2 23 41.0	9.935
13	21 39 30.02	1.9768	9 41 07.6	8.448	13	23 14 03.30	1.9752	2 13 44.4	9.951
14	21 41 28.61	1.9761	9 32 39.3	8.494	14	23 16 01.83	1.9760	2 03 46.9	9.967
15	21 43 27.15	1.9753	9 24 08.3	8.539	15	23 18 00.42	1.9769	1 53 48.4	9.982
16	21 45 25.65	1.9747	9 15 34.6	8.583	16	23 19 59.06	1.9778	1 43 49.1	9.996
17	21 47 24.11	1.9741	9 06 58.3	8.628	17	23 21 57.76	1.9788	1 33 48.9	10.009
18	21 49 22.54	1.9735	8 58 19.3	8.672	18	23 23 56.51	1.9797	1 23 48.0	10.022
19	21 51 20.93	1.9729	8 49 37.7	8.714	19	23 25 55.32	1.9807	1 13 46.3	10.034
20	21 53 19.29	1.9723	8 40 53.6	8.756	20	23 27 54.20	1.9818	1 03 43.9	10.045
21	21 55 17.61	1.9718	8 32 07.0	8.797	21	23 29 53.14	1.9830	0 53 40.9	10.055
22	21 57 15.90	1.9713	8 23 17.9	8.838	22	23 31 52.16	1.9842	0 43 37.3	10.065
23	21 59 14.16	+ 1.9708	S. 8 14 26.4	+ 8.879	23	23 33 51.24	+ 1.9853	S. 0 33 33.1	+ 10.075
FRIDAY 30.					SUNDAY, FEBRUARY 1.				
0	22 01 12.39	+ 1.9703	S. 8 05 32.4	+ 8.919	0	23 35 50.39	+ 1.9865	S. 0 23 28.3	+ 10.084
1	22 03 10.59	1.9698	7 56 36.1	8.958	PHASES OF THE MOON.				
2	22 05 08.77	1.9695	7 47 37.4	8.997					
3	22 07 06.93	1.9691	7 38 36.5	9.034					
4	22 09 05.06	1.9687	7 29 33.3	9.072					
5	22 11 03.17	1.9683	7 20 27.9	9.109	<div>☾ First Quarter . . . Jan. 6 09 56.5</div> <div>○ Full Moon 13 02 17.3</div> <div>☾ Last Quarter 19 23 49.1</div> <div>● New Moon 28 04 38.6</div>				
6	22 13 01.26	1.9681	7 11 20.2	9.146					
7	22 14 59.34	1.9678	7 02 10.4	9.181					
8	22 16 57.40	1.9676	6 52 58.5	9.215					
9	22 18 55.45	1.9674	6 43 44.6	9.249	<div>☾ Perigee Jan. 12 14.9</div> <div>☾ Apogee 25 10.3</div>				
10	22 20 53.49	1.9672	6 34 28.6	9.283					
11	22 22 51.51	1.9670	6 25 10.6	9.317					
12	22 24 49.53	1.9669	6 15 50.6	9.349					
13	22 26 47.54	1.9668	6 06 28.7	9.381					
14	22 28 45.55	1.9668	5 57 04.9	9.412					
15	22 30 43.56	1.9668	5 47 39.3	9.443					
16	22 32 41.56	1.9668	5 38 11.8	9.473					
17	22 34 39.57	1.9668	5 28 42.6	9.501					
18	22 36 37.58	1.9669	5 19 11.7	9.530					
19	22 38 35.60	1.9670	5 09 39.0	9.559					
20	22 40 33.62	1.9671	5 00 04.6	9.586					
21	22 42 31.65	1.9673	4 50 28.7	9.613					
22	22 44 29.70	1.9676	4 40 51.1	9.639					
23	22 46 27.76	1.9678	4 31 12.0	9.664					
24	22 48 25.84	+ 1.9681	S. 4 21 31.4	+ 9.689					

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Noon.	P. L. of Diff.	IIIh	P. L. of Diff.	VIh	P. L. of Diff.	IXh	P. L. of Diff.
			° ' "		° ' "		° ' "		° ' "	
1	SUN	W.	28 45 07	3488	30 05 45	3479	31 26 33	3469	32 47 32	3459
	α Arietis	E.	87 13 16	3117	85 45 27	3113	84 17 33	3109	82 49 34	3105
	Aldebaran	E.	120 24 11	3036	118 54 43	3032	117 25 10	3027	115 55 31	3022
2	SUN	W.	39 34 55	3417	40 56 52	3408	42 18 59	3400	43 41 16	3391
	α Arietis	E.	75 28 25	3083	73 59 55	3079	72 31 20	3074	71 02 39	3070
	Aldebaran	E.	108 25 43	2996	106 55 25	2989	105 24 59	2983	103 54 25	2977
3	SUN	W.	50 35 15	3345	51 58 35	3335	53 22 06	3324	54 45 50	3313
	α Arietis	E.	63 37 43	3044	62 08 25	3039	60 39 00	3034	59 09 29	3029
	Aldebaran	E.	96 19 26	2939	94 47 57	2931	93 16 18	2923	91 44 28	2913
4	SUN	W.	61 47 39	3257	63 12 41	3244	64 37 58	3231	66 03 30	3219
	JUPITER	W.	25 54 35	3032	27 24 08	3012	28 54 06	2993	30 24 28	2975
	α Arietis	E.	51 40 19	3004	50 10 11	3000	48 39 58	2996	47 09 40	2992
	Aldebaran	E.	84 02 19	2865	82 29 15	2854	80 55 57	2842	79 22 24	2831
5	SUN	W.	73 15 06	3149	74 42 16	3135	76 09 43	3120	77 37 29	3105
	JUPITER	W.	38 01 48	2889	39 34 21	2873	41 07 14	2856	42 40 29	2839
	α Arietis	E.	39 37 23	2988	38 06 55	2991	36 36 31	2995	35 06 12	3002
	Aldebaran	E.	71 30 48	2769	69 55 40	2756	68 20 14	2742	66 44 30	2728
	Pollux	E.	114 11 50	2876	112 39 01	2860	111 05 51	2843	109 32 19	2828
6	SUN	W.	85 01 06	3023	86 30 50	3006	88 00 55	2989	89 31 22	2972
	JUPITER	W.	50 32 10	2756	52 07 36	2738	53 43 25	2721	55 19 37	2703
	Fomalhaut	W.	42 49 09	3667	44 06 31	3593	45 25 13	3525	46 45 10	3460
	Aldebaran	E.	58 41 03	2654	57 03 21	2639	55 25 19	2623	53 46 55	2607
	Pollux	E.	101 39 29	2746	100 03 50	2729	98 27 49	2713	96 51 26	2696
7	SUN	W.	97 09 11	2881	98 41 54	2862	100 15 01	2844	101 48 32	2825
	JUPITER	W.	63 26 33	2614	65 05 09	2596	66 44 09	2578	68 23 34	2560
	Fomalhaut	W.	53 41 35	3195	55 07 50	3152	56 34 57	3109	58 02 56	3068
	α Pegasi	W.	36 12 13	3100	37 40 23	3041	39 09 45	2986	40 40 15	2935
	Aldebaran	E.	45 29 22	2524	43 48 42	2507	42 07 39	2490	40 26 12	2472
	Pollux	E.	88 43 55	2612	87 05 16	2595	85 26 14	2577	83 46 48	2560
	Regulus	E.	125 18 14	2540	123 37 57	2521	121 57 13	2502	120 16 03	2485
8	SUN	W.	109 42 14	2731	111 18 13	2712	112 54 36	2693	114 31 25	2675
	JUPITER	W.	76 46 59	2468	78 28 57	2450	80 11 21	2431	81 54 11	2414
	Fomalhaut	W.	65 34 34	2893	67 07 02	2862	68 40 09	2832	70 13 55	2804
	α Pegasi	W.	48 27 39	2726	50 03 44	2692	51 40 35	2657	53 18 12	2626
	Aldebaran	E.	31 52 52	2387	30 08 59	2370	28 24 41	2353	26 39 59	2337
	Pollux	E.	75 23 50	2478	73 42 06	2462	71 59 59	2446	70 17 30	2431
	Regulus	E.	111 43 56	2394	110 00 13	2377	108 16 05	2359	106 31 31	2340
9	SUN	W.	122 41 37	2585	124 20 52	2569	126 00 30	2552	127 40 31	2536
	JUPITER	W.	90 34 42	2326	92 20 04	2309	94 05 51	2292	95 52 02	2276
	Fomalhaut	W.	78 11 30	2680	79 48 37	2658	81 26 14	2637	83 04 19	2618
	α Pegasi	W.	61 36 25	2488	63 17 55	2463	65 00 00	2440	66 42 38	2417
	Pollux	E.	61 39 47	2360	59 55 15	2348	58 10 26	2337	56 25 20	2326
	Regulus	E.	97 42 10	2253	95 55 01	2237	94 07 28	2220	92 19 30	2203

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.	P. L. of Diff.	XVh	P. L. of Diff.	XVIIIh	P. L. of Diff.	XXIh	P. L. of Diff.
			° ' "		° ' "		° ' "		° ' "	
1	SUN	W.	34 08 42	3451	35 30 01	3443	36 51 29	3434	38 13 07	3425
	α Arietis	E.	81 21 31	3101	79 53 23	3096	78 25 09	3092	76 56 50	3087
	Aldebaran	E.	114 25 46	3018	112 55 55	3013	111 25 58	3007	109 55 54	3001
2	SUN	W.	45 03 43	3382	46 26 20	3373	47 49 07	3363	49 12 06	3354
	α Arietis	E.	69 33 53	3065	68 05 00	3060	66 36 01	3054	65 06 55	3049
	Aldebaran	E.	102 23 43	2970	100 52 53	2963	99 21 54	2955	97 50 45	2947
3	SUN	W.	56 09 46	3302	57 33 54	3291	58 58 16	3280	60 22 51	3269
	α Arietis	E.	57 39 52	3023	56 10 08	3018	54 40 18	3013	53 10 21	3009
	Aldebaran	E.	90 12 26	2905	88 40 13	2895	87 07 48	2885	85 35 10	2875
4	SUN	W.	67 29 17	3206	68 55 19	3192	70 21 38	3178	71 48 13	3163
	JUPITER	W.	31 55 12	2957	33 26 19	2940	34 57 47	2923	36 29 37	2906
	α Arietis	E.	45 39 17	2989	44 08 51	2987	42 38 22	2986	41 07 52	2987
	Aldebaran	E.	77 48 36	2819	76 14 33	2808	74 40 15	2795	73 05 40	2782
5	SUN	W.	79 05 33	3089	80 33 56	3073	82 02 39	3056	83 31 42	3039
	JUPITER	W.	44 14 06	2823	45 48 04	2806	47 22 24	2789	48 57 06	2772
	α Arietis	E.	33 36 01	3013	32 06 05	3027	30 36 26	3044	29 07 08	3066
	Aldebaran	E.	65 08 27	2714	63 32 06	2699	61 55 25	2684	60 18 24	2669
	Pollux	E.	107 58 27	2811	106 24 14	2796	104 49 41	2779	103 14 46	2763
6	SUN	W.	91 02 10	2954	92 33 21	2936	94 04 54	2917	95 36 51	2899
	JUPITER	W.	56 56 13	2686	58 33 12	2668	60 10 35	2650	61 48 22	2632
	Fomalhaut	W.	48 06 19	3400	49 28 35	3345	50 51 55	3292	52 16 16	3242
	Aldebaran	E.	52 08 10	2591	50 29 02	2574	48 49 32	2558	47 09 39	2540
	Pollux	E.	95 14 41	2680	93 37 34	2663	92 00 04	2646	90 22 11	2629
7	SUN	W.	103 22 27	2806	104 56 47	2788	106 31 31	2769	108 06 40	2750
	JUPITER	W.	70 03 24	2542	71 43 39	2523	73 24 20	2504	75 05 27	2487
	Fomalhaut	W.	59 31 45	3030	61 01 20	2993	62 31 41	2958	64 02 46	2924
	α Pegasi	W.	42 11 50	2887	43 44 25	2843	45 17 57	2801	46 52 23	2763
	Aldebaran	E.	38 44 20	2456	37 02 05	2438	35 19 25	2422	33 36 21	2404
	Pollux	E.	82 06 58	2544	80 26 46	2527	78 46 10	2510	77 05 11	2494
	Regulus	E.	118 34 29	2467	116 52 29	2449	115 10 04	2431	113 27 13	2412
8	SUN	W.	116 08 38	2657	117 46 16	2638	119 24 19	2621	121 02 46	2603
	JUPITER	W.	83 37 26	2396	85 21 07	2378	87 05 13	2360	88 49 45	2343
	Fomalhaut	W.	71 48 18	2777	73 23 16	2751	74 58 48	2726	76 34 53	2702
	α Pegasi	W.	54 56 31	2596	56 35 31	2567	58 15 11	2539	59 55 30	2513
	Aldebaran	E.	24 54 54	2322	23 09 27	2307	21 23 37	2291	19 37 24	2274
	Pollux	E.	68 34 39	2415	66 51 26	2401	65 07 53	2387	63 24 00	2373
	Regulus	E.	104 46 30	2323	103 01 04	2304	101 15 11	2287	99 28 53	2270
9	SUN	W.	129 20 54	2520	131 01 39	2504	132 42 46	2490	134 24 13	2476
	JUPITER	W.	97 38 37	2260	99 25 36	2245	101 12 57	2229	103 00 41	2214
	Fomalhaut	W.	84 42 50	2599	86 21 47	2583	88 01 06	2566	89 40 48	2551
	α Pegasi	W.	68 25 48	2396	70 09 28	2375	71 53 38	2356	73 38 16	2337
	Pollux	E.	54 39 58	2316	52 54 22	2308	51 08 34	2300	49 22 35	2294
	Regulus	E.	90 31 07	2188	88 42 21	2172	86 53 12	2157	85 03 40	2142

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.	Noon.	P. L. of Diff.	IIIh	P. L. of Diff.	VIh	P. L. of Diff.	IXh	P. L. of Diff.
		° ' "		° ' "		° ' "		° ' "	
10	JUPITER W.	104 48 47	2200	106 37 15	2186	108 26 03	2173	110 15 11	2161
	Fomalhaut W.	91 20 51	2537	93 01 13	2524	94 41 53	2513	96 22 48	2504
	α Pegasi W.	75 23 21	2320	77 08 52	2302	78 54 48	2287	80 41 07	2272
	α Arietis W.	31 51 57	2417	33 35 07	2377	35 19 15	2339	37 04 17	2306
	Pollux E.	47 36 27	2290	45 50 13	2288	44 03 56	2287	42 17 37	2289
	Regulus E.	83 13 45	2128	81 23 28	2115	79 32 51	2101	77 41 53	2088
	MARS E.	123 22 42	2231	121 35 01	2216	119 46 57	2202	117 58 32	2188
11	Fomalhaut W.	104 50 08	2476	106 31 55	2476	108 13 42	2478	109 55 26	2482
	α Pegasi W.	89 37 45	2212	91 25 55	2202	93 14 19	2194	95 02 55	2188
	α Arietis W.	46 00 21	2180	47 49 19	2162	49 38 44	2145	51 28 36	2129
	Aldebaran W.	11 47 10	2056	13 39 17	2040	15 31 49	2026	17 24 42	2014
	Regulus E.	68 22 29	2033	66 29 47	2025	64 36 52	2017	62 43 44	2009
	MARS E.	108 51 32	2128	107 01 15	2118	105 10 44	2109	103 19 58	2100
	Spica E.	121 58 01	2023	120 05 02	2014	118 11 49	2005	116 18 22	1997
12	α Pegasi W.	104 07 50	2172	105 57 00	2173	107 46 09	2175	109 35 14	2178
	α Arietis W.	60 42 59	2074	62 34 38	2067	64 26 28	2061	66 18 27	2056
	Aldebaran W.	26 53 14	1974	28 47 30	1969	30 41 53	1965	32 36 22	1963
	Regulus E.	53 15 35	1985	51 21 37	1982	49 27 35	1981	47 33 31	1981
	MARS E.	94 03 17	2070	92 11 31	2066	90 19 40	2063	88 27 44	2061
	Spica E.	106 48 21	1968	104 53 56	1964	102 59 25	1962	101 04 50	1960
13	α Arietis W.	75 39 37	2050	77 31 54	2052	79 24 08	2054	81 16 18	2058
	Aldebaran W.	42 09 16	1964	44 03 47	1967	45 58 13	1971	47 52 34	1975
	Regulus E.	38 03 35	1995	36 09 53	2001	34 16 21	2009	32 23 01	2019
	MARS E.	79 07 40	2063	77 15 44	2067	75 23 54	2071	73 32 09	2076
	Spica E.	91 31 38	1963	89 37 06	1966	87 42 38	1970	85 48 16	1975
14	α Arietis W.	90 35 06	2092	92 26 17	2103	94 17 12	2113	96 07 52	2124
	Aldebaran W.	57 22 05	2010	59 15 24	2019	61 08 28	2029	63 01 17	2039
	MARS E.	64 15 40	2112	62 24 58	2122	60 34 32	2132	58 44 22	2143
	Spica E.	76 18 47	2011	74 25 30	2021	72 32 28	2031	70 39 41	2041
	Antares E.	121 39 22	2070	119 47 36	2077	117 56 01	2084	116 04 37	2092
15	α Arietis W.	105 16 27	2194	107 05 04	2210	108 53 17	2227	110 41 04	2245
	Aldebaran W.	72 20 53	2103	74 11 47	2117	76 02 20	2132	77 52 30	2147
	Pollux W.	31 08 44	2442	32 51 19	2426	34 34 16	2414	36 17 31	2405
	MARS E.	49 38 01	2209	47 49 47	2225	46 01 56	2241	44 14 29	2257
	Spica E.	61 20 18	2105	59 29 27	2120	57 38 58	2135	55 48 52	2151
	Antares E.	106 51 30	2150	105 01 47	2165	103 12 26	2178	101 23 25	2192
16	Aldebaran W.	86 57 17	2231	88 44 58	2249	90 32 12	2267	92 19 00	2285
	Pollux W.	44 55 09	2411	46 38 28	2419	48 21 36	2427	50 04 33	2437
	MARS E.	35 23 37	2349	33 38 49	2369	31 54 30	2390	30 10 41	2412
	Spica E.	46 44 33	2236	44 56 59	2255	43 09 53	2272	41 23 13	2291
	Antares E.	92 24 12	2276	90 37 37	2293	88 51 27	2311	87 05 44	2330
	SUN E.	139 21 41	2586	137 42 27	2605	136 03 39	2623	134 25 15	2641
17	Aldebaran W.	101 06 09	2380	102 50 12	2400	104 33 47	2419	106 16 55	2438
	Pollux W.	58 35 11	2502	60 16 21	2518	61 57 09	2533	63 37 37	2549
	Regulus W.	21 33 50	2467	23 15 50	2476	24 57 38	2486	26 39 11	2498

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.	P. L. of Diff.	XVh	P. L. of Diff.	XVIIIh	P. L. of Diff.	XXIh	P. L. of Diff.
			° ' "		° ' "		° ' "		° ' "	
10	JUPITER	W.	112 04 38	2149	113 54 23	2137	115 44 26	2127	117 34 44	2116
	Fomalhaut	W.	98 03 56	2495	99 45 16	2487	101 26 47	2482	103 08 25	2479
	α Pegasi	W.	82 27 48	2258	84 14 50	2245	86 02 11	2233	87 49 50	2222
	α Arietis	W.	38 50 08	2275	40 36 44	2247	42 24 01	2223	44 11 54	2200
	Pollux	E.	40 31 20	2394	38 45 11	2302	36 59 14	2313	35 13 33	2347
	Regulus	E.	75 50 36	2076	73 59 00	2064	72 07 06	2053	70 14 55	2043
	MARS	E.	116 09 46	2174	114 20 40	2162	112 31 15	2150	110 41 32	2139
11	Fomalhaut	W.	111 37 05	2487	113 18 37	2495	114 59 57	2506	116 41 02	2519
	α Pegasi	W.	96 51 41	2182	98 40 35	2178	100 29 36	2175	102 18 41	2172
	α Arietis	W.	53 18 51	2115	55 09 27	2103	57 00 21	2092	58 51 33	2083
	Aldebaran	W.	19 17 54	2003	21 11 24	1993	23 05 09	1986	24 59 06	1979
	Regulus	E.	60 50 24	2003	58 56 54	1997	57 03 15	1992	55 09 28	1988
	MARS	E.	101 28 59	2092	99 37 48	2086	97 46 27	2079	95 54 56	2074
	Spica	E.	114 24 43	1989	112 30 52	1982	110 36 50	1977	108 42 39	1972
12	α Pegasi	W.	111 24 14	2183	113 13 07	2189	115 01 51	2198	116 50 22	2209
	α Arietis	W.	68 10 34	2053	70 02 46	2051	71 55 01	2049	73 47 19	2049
	Aldebaran	W.	34 30 55	1962	36 25 30	1961	38 20 06	1961	40 14 42	1962
	Regulus	E.	45 39 26	1981	43 45 22	1983	41 51 21	1986	39 57 25	1990
	MARS	E.	86 35 44	2060	84 43 43	2059	82 51 41	2059	80 59 39	2061
	Spica	E.	99 10 12	1959	97 15 33	1958	95 20 53	1959	93 26 14	1961
13	α Arietis	W.	83 08 22	2063	85 00 18	2069	86 52 05	2076	88 43 42	2084
	Aldebaran	W.	49 46 48	1981	51 40 53	1987	53 34 47	1994	55 28 32	2001
	Regulus	E.	30 29 56	2031	28 37 09	2044	26 44 42	2059	24 52 39	2075
	MARS	E.	71 40 31	2081	69 49 03	2087	67 57 44	2094	66 06 36	2102
	Spica	E.	83 54 02	1981	81 59 57	1987	80 06 02	1994	78 12 18	2002
14	α Arietis	W.	97 58 15	2136	99 48 19	2149	101 38 03	2163	103 27 26	2178
	Aldebaran	W.	64 53 50	2051	66 46 05	2064	68 38 00	2076	70 29 36	2088
	MARS	E.	56 54 27	2155	55 04 51	2167	53 15 34	2180	51 26 37	2194
	Spica	E.	68 47 10	2053	66 54 58	2065	65 03 05	2078	63 11 31	2091
	Antares	E.	114 13 26	2103	112 22 31	2115	110 31 54	2126	108 41 33	2137
15	α Arietis	W.	112 28 25	2264	114 15 18	2283	116 01 43	2303	117 47 38	2324
	Aldebaran	W.	79 42 17	2164	81 31 39	2180	83 20 37	2196	85 09 10	2214
	Pollux	W.	38 00 58	2401	39 44 32	2399	41 28 08	2401	43 11 41	2405
	MARS	E.	42 27 26	2274	40 40 49	2292	38 54 38	2310	37 08 54	2329
	Spica	E.	53 59 10	2167	52 09 53	2184	50 21 01	2200	48 32 34	2218
	Antares	E.	99 34 46	2209	97 46 32	2225	95 58 41	2241	94 11 14	2258
16	Aldebaran	W.	94 05 21	2304	95 51 14	2323	97 36 40	2342	99 21 38	2361
	Pollux	W.	51 47 16	2448	53 29 41	2461	55 11 49	2473	56 53 40	2487
	MARS	E.	28 27 23	2436	26 44 39	2459	25 02 28	2483	23 20 51	2507
	Spica	E.	39 37 01	2311	37 51 17	2331	36 06 03	2351	34 21 17	2371
	Antares	E.	85 20 27	2349	83 35 39	2368	81 51 18	2387	80 07 24	2407
	SUN	E.	132 47 16	2659	131 09 41	2678	129 32 31	2697	127 55 47	2716
17	Aldebaran	W.	107 59 35	2458	109 41 47	2477	111 23 32	2497	113 04 50	2515
	Pollux	W.	65 17 42	2566	66 57 24	2582	68 36 44	2599	70 15 41	2616
	Regulus	W.	28 20 27	2510	30 01 26	2524	31 42 06	2539	33 22 25	2554

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month	Name and Direction of Object.		Noon.	P. L. of Diff.	IIIh	P. L. of Diff.	VIh	P. L. of Diff.	IXh	P. L. of Diff.
			° ' "		° ' "		° ' "		° ' "	
17	Spica	E.	32 37 00	2391	30 53 12	2411	29 09 53	2432	27 27 04	2454
	Antares	E.	78 23 59	2427	76 41 03	2447	74 58 34	2467	73 16 34	2487
	SUN	E.	126 19 28	2736	124 43 36	2756	123 08 10	2775	121 33 10	2795
18	Pollux	W.	71 54 14	2634	73 32 23	2651	75 10 09	2668	76 47 32	2685
	Regulus	W.	35 02 23	2570	36 41 59	2587	38 21 12	2603	40 00 03	2619
	Antares	E.	64 53 42	2591	63 14 34	2610	61 35 53	2631	59 57 41	2652
	SUN	E.	113 44 45	2898	112 12 23	2917	110 40 26	2937	109 08 54	2957
19	Pollux	W.	84 48 39	2772	86 23 44	2788	87 58 27	2805	89 32 48	2822
	Regulus	W.	48 08 42	2703	49 45 18	2719	51 21 33	2735	52 57 27	2750
	Antares	E.	51 53 38	2756	50 18 13	2777	48 43 16	2798	47 08 46	2820
	SUN	E.	101 37 25	3054	100 08 19	3072	98 39 35	3091	97 11 14	3109
20	Pollux	W.	97 19 12	2903	98 51 27	2918	100 23 23	2933	101 55 00	2948
	Regulus	W.	60 51 50	2826	62 25 44	2840	63 59 20	2854	65 32 38	2867
	MARS	W.	17 39 50	2982	19 10 19	2990	20 40 44	2998	22 11 02	3005
	Antares	E.	39 23 14	2930	37 51 33	2953	36 20 21	2977	34 49 40	3002
	SUN	E.	89 54 50	3193	88 28 33	3210	87 02 36	3225	85 36 57	3240
21	Pollux	W.	109 28 26	3019	110 58 15	3033	112 27 46	3046	113 57 02	3060
	Regulus	W.	73 14 59	2929	74 46 41	2940	76 18 08	2951	77 49 22	2962
	MARS	W.	29 40 09	3045	31 09 26	3054	32 38 32	3062	34 07 28	3071
	Spica	W.	19 38 52	2942	21 10 17	2951	22 41 30	2960	24 12 33	2969
	SUN	E.	78 32 57	3310	77 08 57	3323	75 45 12	3335	74 21 41	3346
22	Regulus	W.	85 22 26	3008	86 52 29	3016	88 22 22	3023	89 52 06	3030
	MARS	W.	41 29 34	3110	42 57 31	3117	44 25 20	3124	45 53 01	3130
	Spica	W.	31 45 18	3007	33 15 22	3014	34 45 17	3021	36 15 04	3027
	SUN	E.	67 27 16	3399	66 04 58	3408	64 42 50	3416	63 20 52	3424
23	Regulus	W.	97 18 41	3060	98 47 39	3065	100 16 30	3070	101 45 16	3074
	MARS	W.	53 09 39	3156	54 36 41	3160	56 03 37	3164	57 30 30	3168
	Spica	W.	43 42 06	3055	45 11 11	3060	46 40 10	3064	48 09 05	3068
	SUN	E.	56 33 14	3460	55 12 06	3466	53 51 04	3471	52 30 08	3477
24	Regulus	W.	109 07 57	3090	110 36 18	3092	112 04 37	3094	113 32 54	3096
	MARS	W.	64 43 57	3180	66 10 30	3181	67 37 02	3182	69 03 33	3183
	Spica	W.	55 32 34	3081	57 01 07	3083	58 29 37	3084	59 58 06	3086
	SUN	E.	45 46 51	3499	44 26 26	3503	43 06 05	3506	41 45 47	3509
25	MARS	W.	76 16 00	3183	77 42 30	3181	79 09 02	3180	80 35 35	3179
	Spica	W.	67 20 15	3087	68 48 40	3087	70 17 06	3086	71 45 33	3085
	SUN	E.	35 05 09	3523	33 45 10	3526	32 25 15	3530	31 05 24	3533
30	SUN	W.	20 25 43	3416	21 47 41	3397	23 10 01	3379	24 32 42	3362
	Aldebaran	E.	99 12 58	2925	97 41 11	2918	96 09 15	2910	94 37 09	2904
31	SUN	W.	31 30 40	3391	32 55 02	3278	34 19 39	3266	35 44 30	3254
	Aldebaran	E.	86 54 26	2867	85 21 25	2860	83 48 15	2852	82 14 54	2844

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.	Midnight.	P. L. of Diff.	XVh	P. L. of Diff.	XVIIIh	P. L. of Diff.	XXIh	P. L. of Diff.
		° ' "		° ' "		° ' "		° ' "	
17	Spica E.	25 44 46	2476	24 02 59	2498	22 21 43	2520	20 40 58	2542
	Antares E.	71 35 02	2507	69 53 59	2528	68 13 25	2549	66 33 20	2569
	SUN E.	119 58 36	2816	118 24 29	2836	116 50 49	2856	115 17 34	2876
18	Pollux W.	78 24 32	2703	80 01 08	2720	81 37 21	2738	83 13 11	2754
	Regulus W.	41 38 32	2636	43 16 38	2653	44 54 21	2669	46 31 43	2686
	Antares E.	58 19 56	2673	56 42 40	2693	55 05 51	2714	53 29 31	2735
	SUN E.	107 37 47	2977	106 07 05	2997	104 36 48	3016	103 06 55	3035
19	Pollux W.	91 06 47	2839	92 40 24	2855	94 13 41	2871	95 46 37	2887
	Regulus W.	54 33 00	2766	56 08 12	2782	57 43 04	2796	59 17 37	2811
	Antares E.	45 34 44	2841	44 01 09	2863	42 28 02	2885	40 55 24	2907
	SUN E.	95 43 15	3127	94 15 38	3144	92 48 22	3161	91 21 26	3178
20	Pollux W.	103 26 18	2963	104 57 17	2978	106 27 57	2992	107 58 20	3005
	Regulus W.	67 05 39	2880	68 38 23	2893	70 10 50	2905	71 43 02	2917
	MARS W.	23 41 12	3010	25 11 12	3018	26 41 02	3027	28 10 41	3036
	Antares E.	33 19 30	3030	31 49 54	3057	30 20 52	3087	28 52 27	3118
	SUN E.	84 11 35	3255	82 46 31	3270	81 21 44	3285	79 57 13	3296
21	Pollux W.	115 26 01	3073	116 54 43	3086	118 23 10	3098	119 51 22	3110
	Regulus W.	79 20 23	2972	80 51 11	2981	82 21 47	2990	83 52 12	2999
	MARS W.	35 36 14	3080	37 04 48	3088	38 33 13	3096	40 01 28	3103
	Spica W.	25 43 25	2976	27 14 08	2984	28 44 41	2992	30 15 04	2999
	SUN E.	72 58 23	3358	71 35 18	3369	70 12 26	3379	68 49 45	3389
22	Regulus W.	91 21 41	3037	92 51 07	3043	94 20 26	3050	95 49 37	3056
	MARS W.	47 20 34	3136	48 48 00	3142	50 15 19	3147	51 42 32	3152
	Spica W.	37 44 43	3033	39 14 14	3039	40 43 38	3045	42 12 55	3050
	SUN E.	61 59 03	3433	60 37 24	3440	59 15 53	3447	57 54 30	3454
23	Regulus W.	103 13 57	3078	104 42 33	3082	106 11 05	3085	107 39 33	3088
	MARS W.	58 57 18	3171	60 24 02	3173	61 50 43	3176	63 17 21	3178
	Spica W.	49 37 54	3071	51 06 39	3074	52 35 21	3077	54 03 59	3079
	SUN E.	51 09 18	3482	49 48 34	3487	48 27 55	3491	47 07 21	3495
24	Regulus W.	115 01 08	3098	116 29 20	3099	117 57 31	3099	119 25 42	3099
	MARS W.	70 30 03	3183	71 56 32	3183	73 23 01	3183	74 49 30	3183
	Spica W.	61 26 33	3087	62 54 59	3087	64 23 25	3087	65 51 50	3087
	SUN E.	40 25 33	3512	39 05 22	3515	37 45 15	3518	36 25 10	3521
25	MARS W.	82 02 10	3178	83 28 46	3175	84 55 25	3173	86 22 07	3171
	Spica W.	73 14 01	3083	74 42 31	3082	76 11 02	3080	77 39 36	3078
	SUN E.	29 45 36	3536	28 25 52	3541	27 06 13	3546	25 46 39	3551
30	SUN W.	25 55 43	3345	27 19 02	3330	28 42 39	3316	30 06 32	3303
	Aldebaran E.	93 04 55	2897	91 32 32	2890	90 00 00	2882	88 27 18	2874
31	SUN W.	37 09 36	3242	38 34 55	3231	40 00 27	3220	41 26 13	3209
	Aldebaran E.	80 41 23	2835	79 07 41	2828	77 33 49	2819	75 59 46	2810

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S					Sidereal Time of Semi-diameter Passing Meridian.	Equation of Time, to be Added to Apparent Time.	Diff. for 1 Hour.
		Apparent Right Ascension.	Diff. for 1 Hour.	Apparent Declination.	Diff. for 1 Hour.	Semi-diameter.			
		h m s	s	° ' "	"	' "	s	m s	s
<i>SUN.</i>	1	20 55 45.62	+ 10.224	S. 17 20 44.2	+ 42.04	16 15.66	68.33	13 39.20	0.366
Mon.	2	20 59 50.54	10.188	17 03 46.0	42.79	16 15.52	68.22	13 47.55	0.331
Tues.	3	21 03 54.62	10.153	16 46 30.0	43.53	16 15.38	68.10	13 55.05	0.296
Wed.	4	21 07 57.86	+ 10.118	16 28 56.4	+ 44.26	16 15.23	67.99	14 01.72	0.261
Thur.	5	21 12 00.25	10.083	16 11 05.8	44.96	16 15.08	67.88	14 07.55	0.226
Frid.	6	21 16 01.82	10.049	15 52 58.5	45.65	16 14.93	67.76	14 12.55	0.192
Sat.	7	21 20 02.55	+ 10.014	15 34 35.0	+ 46.32	16 14.76	67.65	14 16.71	0.157
<i>SUN.</i>	8	21 24 02.45	9.980	15 15 55.6	46.97	16 14.60	67.53	14 20.05	0.123
Mon.	9	21 28 01.53	9.946	14 57 00.9	47.60	16 14.43	67.42	14 22.57	0.089
Tues.	10	21 31 59.81	+ 9.913	14 37 51.0	+ 48.22	16 14.26	67.31	14 24.28	0.056
Wed.	11	21 35 57.29	9.880	14 18 26.6	48.82	16 14.08	67.20	14 25.22	0.023
Thur.	12	21 39 53.99	9.847	13 58 47.8	49.41	16 13.89	67.08	14 25.35	0.009
Frid.	13	21 43 49.92	+ 9.815	13 38 55.3	+ 49.98	16 13.70	66.97	14 24.73	0.041
Sat.	14	21 47 45.10	9.784	13 18 49.2	50.53	16 13.51	66.87	14 23.36	0.072
<i>SUN.</i>	15	21 51 39.54	9.754	12 58 30.2	51.06	16 13.31	66.77	14 21.26	0.102
Mon.	16	21 55 33.26	+ 9.724	12 37 58.5	+ 51.58	16 13.11	66.66	14 18.43	0.132
Tues.	17	21 59 26.26	9.695	12 17 14.5	52.08	16 12.91	66.56	14 14.89	0.161
Wed.	18	22 03 18.57	9.666	11 56 18.7	52.56	16 12.69	66.46	14 10.66	0.190
Thur.	19	22 07 10.20	+ 9.638	11 35 11.5	+ 53.03	16 12.48	66.36	14 05.74	0.218
Frid.	20	22 11 01.16	9.610	11 13 53.4	53.48	16 12.26	66.26	14 00.16	0.246
Sat.	21	22 14 51.45	9.583	10 52 24.5	53.91	16 12.03	66.16	13 53.92	0.273
<i>SUN.</i>	22	22 18 41.11	+ 9.557	10 30 45.6	+ 54.33	16 11.81	66.07	13 47.04	0.299
Mon.	23	22 22 30.14	9.531	10 08 57.0	54.73	16 11.58	65.98	13 39.54	0.325
Tues.	24	22 26 18.54	9.506	9 46 59.0	55.11	16 11.36	65.89	13 31.42	0.350
Wed.	25	22 30 06.35	+ 9.480	9 24 52.1	+ 55.47	16 11.13	65.80	13 22.70	0.375
Thur.	26	22 33 53.57	9.456	9 02 36.8	55.82	16 10.90	65.72	13 13.39	0.399
Frid.	27	22 37 40.21	9.432	8 40 13.3	56.14	16 10.66	65.63	13 03.51	0.423
Sat.	28	22 41 26.29	9.409	8 17 42.2	56.45	16 10.42	65.55	12 53.05	0.446
<i>SUN.</i>	29	22 45 11.82	+ 9.386	S. 7 55 03.8	+ 56.75	16 10.18	65.47	12 42.07	0.469

NOTE.—The mean time of semidiameter passing meridian may be found by subtracting 0.18* from the sidereal time. The sign + prefixed to the hourly change of declination indicates that south declinations are decreasing.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S				Equation of Time, to be Subtracted from Mean Time.	Diff. for 1 Hour.	Sidereal Time, or Right Ascension of Mean Sun.
		Apparent Right Ascension.	Diff. for 1 Hour.	Apparent Declination.	Diff. for 1 Hour.			
		h m s	s	° ' "	"	m s	s	h m s
SUN.	1	20 55 43.29	+ 10.222	S. 17 20 53.8	+ 42.03	13 39.12	- 0.366	20 42 04.17
Mon.	2	20 59 48.19	10.187	17 03 55.9	42.78	13 47.47	0.331	20 46 00.72
Tues.	3	21 03 52.26	10.152	16 46 40.1	43.52	13 54.98	0.296	20 49 57.28
Wed.	4	21 07 55.49	+ 10.117	16 29 06.8	+ 44.25	14 01.66	- 0.261	20 53 53.83
Thur.	5	21 11 57.88	10.082	16 11 16.4	44.95	14 07.49	0.226	20 57 50.39
Frid.	6	21 15 59.44	10.048	15 53 09.3	45.64	14 12.50	0.192	21 01 46.94
Sat.	7	21 20 00.17	+ 10.013	15 34 46.0	+ 46.31	14 16.67	- 0.157	21 05 43.50
SUN.	8	21 24 00.07	9.979	15 16 06.9	46.96	14 20.02	0.123	21 09 40.05
Mon.	9	21 27 59.15	9.945	14 57 12.3	47.59	14 22.55	0.089	21 13 36.60
Tues.	10	21 31 57.43	+ 9.912	14 38 02.6	+ 48.21	14 24.27	- 0.056	21 17 33.16
Wed.	11	21 35 54.92	9.879	14 18 38.3	48.81	14 25.21	- 0.023	21 21 29.71
Thur.	12	21 39 51.62	9.847	13 58 59.7	49.40	14 25.35	+ 0.009	21 25 26.27
Frid.	13	21 43 47.56	+ 9.815	13 39 07.3	+ 49.97	14 24.74	+ 0.041	21 29 22.82
Sat.	14	21 47 42.75	9.784	13 19 01.3	50.52	14 23.38	0.072	21 33 19.37
SUN.	15	21 51 37.21	9.754	12 58 42.4	51.06	14 21.28	0.102	21 37 15.93
Mon.	16	21 55 30.94	+ 9.724	12 38 10.7	+ 51.58	14 18.46	+ 0.132	21 41 12.48
Tues.	17	21 59 23.96	9.695	12 17 26.9	52.08	14 14.93	0.161	21 45 09.03
Wed.	18	22 03 16.29	9.666	11 56 31.1	52.56	14 10.70	0.190	21 49 05.59
Thur.	19	22 07 07.93	+ 9.638	11 35 24.0	+ 53.03	14 05.79	+ 0.218	21 53 02.14
Frid.	20	22 10 58.91	9.610	11 14 05.8	53.48	14 00.22	0.246	21 56 58.69
Sat.	21	22 14 49.23	9.583	10 52 37.1	53.91	13 53.98	0.273	22 00 55.25
SUN.	22	22 18 38.91	+ 9.557	10 30 58.1	+ 54.33	13 47.11	+ 0.299	22 04 51.80
Mon.	23	22 22 27.97	9.531	10 09 09.4	54.73	13 39.62	0.325	22 08 48.35
Tues.	24	22 26 16.40	9.506	9 47 11.4	55.11	13 31.49	0.350	22 12 44.91
Wed.	25	22 30 04.24	+ 9.481	9 25 04.5	+ 55.47	13 22.78	+ 0.375	22 16 41.46
Thur.	26	22 33 51.48	9.457	9 02 49.0	55.82	13 13.47	0.399	22 20 38.01
Frid.	27	22 37 38.16	9.433	8 40 25.5	56.14	13 03.60	0.423	22 24 34.56
Sat.	28	22 41 24.27	9.410	8 17 54.3	56.45	12 53.15	0.446	22 28 31.12
SUN.	29	22 45 09.84	+ 9.387	S. 7 55 15.9	+ 56.75	12 42.17	+ 0.469	22 32 27.67

NOTE.—The semidiameter for mean noon may be assumed the same as that for apparent noon.
The sign + prefixed to the hourly change of declination indicates that south declinations are decreasing.

Diff. for 1 Hour,
+9.8565".
(Table III.)

AT GREENWICH MEAN NOON.									
Day of the Month.	Day of the Year.	THE SUN'S					Logarithm of the Radius Vector of the Earth.	Diff. for 1 Hour.	Mean Time of Sidereal Noon.
		TRUE LONGITUDE.		Diff. for 1 Hour.	LATITUDE.				
		λ	λ'						
		$^{\circ}$ $'$ $''$	$'$ $''$	$''$	$''$				h m s
1	32	311 28 31.6	28 20.2	+152.27	— 0.10	9.993 6389	+ 25.7		3 17 23.40
2	33	312 29 25.4	29 13.8	152.21	0.22	9.993 7012	26.3		3 13 27.50
3	34	313 30 17.8	30 06.1	152.16	0.36	9.993 7652	27.0		3 09 31.59
4	35	314 31 08.9	30 57.0	+152.10	— 0.49	9.993 8307	+ 27.7		3 05 35.68
5	36	315 31 58.4	31 46.4	152.03	0.60	9.993 8980	28.4		3 01 39.77
6	37	316 32 46.5	32 34.4	151.97	0.71	9.993 9672	29.2		2 57 43.86
7	38	317 33 33.0	33 20.8	+151.91	— 0.80	9.994 0384	+ 30.1		2 53 47.95
8	39	318 34 18.0	34 05.6	151.84	0.85	9.994 1116	31.0		2 49 52.04
9	40	319 35 01.4	34 48.9	151.78	0.87	9.994 1872	31.9		2 45 56.14
10	41	320 35 43.3	35 30.8	+151.72	— 0.86	9.994 2650	+ 32.9		2 42 00.23
11	42	321 36 23.8	36 11.1	151.66	0.81	9.994 3452	33.9		2 38 04.32
12	43	322 37 02.8	36 50.0	151.60	0.74	9.994 4277	34.9		2 34 08.41
13	44	323 37 40.5	37 27.6	+151.54	— 0.64	9.994 5127	+ 35.9		2 30 12.50
14	45	324 38 16.8	38 03.8	151.49	0.52	9.994 5998	36.8		2 26 16.60
15	46	325 38 51.9	38 38.8	151.43	0.39	9.994 6892	37.6		2 22 20.69
16	47	326 39 25.7	39 12.5	+151.38	— 0.26	9.994 7805	+ 38.4		2 18 24.78
17	48	327 39 58.3	39 44.9	151.34	0.13	9.994 8737	39.2		2 14 28.87
18	49	328 40 29.6	40 16.1	151.28	— 0.01	9.994 9687	39.9		2 10 32.97
19	50	329 40 59.6	40 46.0	+151.22	+ 0.09	9.995 0652	+ 40.5		2 06 37.06
20	51	330 41 28.3	41 14.7	151.17	0.18	9.995 1631	41.1		2 02 41.15
21	52	331 41 55.7	41 41.9	151.11	0.24	9.995 2623	41.6		1 58 45.24
22	53	332 42 21.6	42 07.8	+151.04	+ 0.27	9.995 3627	+ 42.1		1 54 49.34
23	54	333 42 46.2	42 32.2	150.99	0.28	9.995 4642	42.5		1 50 53.43
24	55	334 43 09.2	42 55.2	150.93	0.26	9.995 5667	42.9		1 46 57.52
25	56	335 43 30.7	43 16.6	+150.86	+ 0.22	9.995 6700	+ 43.2		1 43 01.62
26	57	336 43 50.6	43 36.4	150.79	0.15	9.995 7740	43.5		1 39 05.71
27	58	337 44 08.8	43 54.5	150.72	+ 0.07	9.995 8787	43.8		1 35 09.80
28	59	338 44 25.2	44 10.8	150.65	— 0.04	9.995 9841	44.0		1 31 13.90
29	60	339 44 39.8	44 25.4	+150.57	— 0.16	9.996 0900	+ 44.3		1 27 17.99
NOTE.—The longitudes in the column λ are referred to the true equinox of their own date, while those in the column λ' are referred to the mean equinox of the beginning of the Besselian fictitious year.									Diff. for 1 Hour, — 9.8296 ^s . (Table II.)

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month.	SEMIDIAMETER.		HORIZONTAL PARALLAX.				UPPER TRANSIT.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 Hour.	Midnight.	Diff. for 1 Hour.	Meridian of Greenwich.	Diff. for 1 Hour.	Noon.
	" "	" "	" "	" "	" "	" "	h m	m	d
1	15 13.1	15 17.4	55 45.2	+ 1.27	56 00.9	+ 1.35	2 59.2	+ 1.89	3.8
2	15 22.0	15 26.9	56 17.8	1.45	56 35.7	1.53	3 45.0	1.94	4.8
3	15 32.0	15 37.4	56 54.6	1.61	57 14.5	1.69	4 32.3	2.03	5.8
4	15 43.1	15 48.9	57 35.3	+ 1.75	57 56.7	+ 1.80	5 22.0	+ 2.14	6.8
5	15 54.9	16 00.9	58 18.6	1.83	58 40.6	1.83	6 14.5	2.27	7.8
6	16 06.8	16 12.6	59 02.4	1.79	59 23.7	1.72	7 10.2	2.39	8.8
7	16 18.1	16 23.1	59 43.8	+ 1.61	60 02.3	+ 1.45	8 08.6	+ 2.49	9.8
8	16 27.6	16 31.3	60 18.6	1.24	60 32.2	0.99	9 08.8	2.53	10.8
9	16 34.1	16 35.9	60 42.5	0.70	60 49.1	+ 0.38	10 09.6	2.52	11.8
10	16 36.6	16 36.1	60 51.7	+ 0.03	60 49.9	- 0.33	11 09.3	+ 2.45	12.8
11	16 34.5	16 31.6	60 43.8	- 0.69	60 33.4	1.03	12 07.0	2.35	13.8
12	16 27.7	16 22.7	60 19.0	1.35	60 00.8	1.64	13 02.2	2.25	14.8
13	16 17.0	16 10.4	59 39.5	- 1.88	59 15.7	- 2.07	13 54.9	+ 2.15	15.8
14	16 03.4	15 56.0	58 49.8	2.20	58 22.7	2.29	14 45.7	2.08	16.8
15	15 48.4	15 40.8	57 54.9	2.32	57 27.1	2.30	15 35.0	2.04	17.8
16	15 33.4	15 26.2	56 59.7	- 2.23	56 33.4	- 2.13	16 23.4	+ 2.01	18.8
17	15 19.5	15 13.2	56 08.5	2.00	55 45.4	1.84	17 11.4	1.99	19.8
18	15 07.4	15 02.3	55 24.4	1.66	55 05.6	1.46	17 59.2	1.99	20.8
19	14 57.9	14 54.1	54 49.3	- 1.25	54 35.5	- 1.04	18 46.9	+ 1.98	21.8
20	14 51.0	14 48.7	54 24.2	0.83	54 15.5	0.62	19 34.4	1.98	22.8
21	14 47.0	14 46.0	54 09.4	0.41	54 05.7	- 0.21	20 21.8	1.96	23.8
22	14 45.6	14 45.9	54 04.3	- 0.02	54 05.3	+ 0.16	21 08.7	+ 1.94	24.8
23	14 46.7	14 48.0	54 08.2	+ 0.33	54 13.1	0.48	21 55.1	1.92	25.8
24	14 49.8	14 52.0	54 19.8	0.62	54 28.0	0.74	22 41.0	1.90	26.8
25	14 54.7	14 57.6	54 37.6	+ 0.85	54 48.3	+ 0.94	23 26.4	+ 1.89	27.8
26	15 00.8	15 04.2	55 00.1	1.01	55 12.7	1.08	0		28.8
27	15 07.8	15 11.6	55 25.9	1.13	55 39.7	1.16	0 11.6	1.89	0.1
28	15 15.4	15 19.4	55 53.8	1.19	56 08.3	1.21	0 57.1	1.91	1.1
29	15 23.4	15 27.4	56 22.9	+ 1.23	56 37.7	+ 1.23	1 43.2	+ 1.95	2.1

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
SUNDAY 1.					TUESDAY 3.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
0	23 35 50.39	+ 1.9865	S. 0 23 28.3	+ 10.084	0	1 13 28.18	+ 2.0989	N. 7 36 19.5	+ 9.607
1	23 37 49.62	1.9878	0 13 23.0	10.092	1	1 15 34.22	2.1023	7 45 55.0	9.577
2	23 39 48.93	1.9891	S. 0 03 17.3	10.098	2	1 17 40.46	2.1058	7 55 28.7	9.547
3	23 41 48.31	1.9904	N. 0 06 48.8	10.105	3	1 19 46.92	2.1094	8 05 00.6	9.515
4	23 43 47.78	1.9919	0 16 55.3	10.111	4	1 21 53.59	2.1130	8 14 30.5	9.482
5	23 45 47.34	1.9934	0 27 02.1	10.116	5	1 24 00.48	2.1166	8 23 58.4	9.448
6	23 47 46.99	1.9949	0 37 09.2	10.120	6	1 26 07.58	2.1203	8 33 24.3	9.413
7	23 49 46.73	1.9964	0 47 16.5	10.123	7	1 28 14.91	2.1240	8 42 48.1	9.378
8	23 51 46.56	1.9980	0 57 24.0	10.127	8	1 30 22.46	2.1278	8 52 09.7	9.343
9	23 53 46.49	1.9997	1 07 31.7	10.129	9	1 32 30.24	2.1316	9 01 29.2	9.306
10	23 55 46.52	2.0013	1 17 39.5	10.130	10	1 34 38.25	2.1354	9 10 46.4	9.268
11	23 57 46.65	2.0030	1 27 47.3	10.130	11	1 36 46.49	2.1393	9 20 01.3	9.228
12	23 59 46.88	2.0048	1 37 55.1	10.130	12	1 38 54.96	2.1432	9 29 13.8	9.188
13	0 01 47.22	2.0066	1 48 02.9	10.130	13	1 41 03.67	2.1471	9 38 23.9	9.148
14	0 03 47.67	2.0085	1 58 10.7	10.128	14	1 43 12.61	2.1511	9 47 31.5	9.106
15	0 05 48.24	2.0104	2 08 18.3	10.125	15	1 45 21.80	2.1552	9 56 36.6	9.063
16	0 07 48.92	2.0123	2 18 25.7	10.123	16	1 47 31.23	2.1592	10 05 39.1	9.019
17	0 09 49.72	2.0143	2 28 33.0	10.119	17	1 49 40.90	2.1633	10 14 38.9	8.974
18	0 11 50.64	2.0163	2 38 40.0	10.114	18	1 51 50.82	2.1674	10 23 36.0	8.929
19	0 13 51.68	2.0184	2 48 46.7	10.109	19	1 54 00.99	2.1716	10 32 30.4	8.883
20	0 15 52.85	2.0206	2 58 53.1	10.103	20	1 56 11.41	2.1758	10 41 21.9	8.835
21	0 17 54.15	2.0228	3 08 59.1	10.096	21	1 58 22.08	2.1800	10 50 10.6	8.788
22	0 19 55.58	2.0250	3 19 04.6	10.088	22	2 00 33.01	2.1843	10 58 56.4	8.738
23	0 21 57.15	+ 2.0273	N. 3 29 09.7	+ 10.080	23	2 02 44.20	+ 2.1887	N. 11 07 39.1	+ 8.687
MONDAY 2.					WEDNESDAY 4.				
0	0 23 58.85	+ 2.0295	N. 3 39 14.2	+ 10.071	0	2 04 55.65	+ 2.1930	N. 11 16 18.8	+ 8.636
1	0 26 00.69	2.0319	3 49 18.2	10.061	1	2 07 07.36	2.1973	11 24 55.4	8.583
2	0 28 02.68	2.0343	3 59 21.5	10.049	2	2 09 19.33	2.2018	11 33 28.8	8.530
3	0 30 04.81	2.0368	4 09 24.1	10.038	3	2 11 31.57	2.2062	11 41 58.9	8.475
4	0 32 07.09	2.0393	4 19 26.1	10.027	4	2 13 44.07	2.2107	11 50 25.8	8.419
5	0 34 09.53	2.0419	4 29 27.3	10.013	5	2 15 56.85	2.2152	11 58 49.3	8.363
6	0 36 12.12	2.0444	4 39 27.6	9.998	6	2 18 09.89	2.2197	12 07 09.4	8.307
7	0 38 14.86	2.0470	4 49 27.1	9.984	7	2 20 23.21	2.2243	12 15 26.1	8.248
8	0 40 17.76	2.0498	4 59 25.7	9.969	8	2 22 36.80	2.2288	12 23 39.2	8.188
9	0 42 20.83	2.0525	5 09 23.4	9.953	9	2 24 50.67	2.2335	12 31 48.7	8.128
10	0 44 24.06	2.0553	5 19 20.0	9.935	10	2 27 04.82	2.2381	12 39 54.6	8.067
11	0 46 27.46	2.0581	5 29 15.6	9.917	11	2 29 19.24	2.2427	12 47 56.7	8.003
12	0 48 31.03	2.0609	5 39 10.1	9.898	12	2 31 33.94	2.2473	12 55 55.0	7.940
13	0 50 34.77	2.0638	5 49 03.4	9.878	13	2 33 48.92	2.2521	13 03 49.5	7.876
14	0 52 38.69	2.0668	5 58 55.5	9.858	14	2 36 04.19	2.2568	13 11 40.1	7.811
15	0 54 42.79	2.0698	6 08 46.4	9.838	15	2 38 19.74	2.2616	13 19 26.8	7.744
16	0 56 47.07	2.0728	6 18 36.0	9.815	16	2 40 35.58	2.2663	13 27 09.4	7.676
17	0 58 51.53	2.0760	6 28 24.2	9.792	17	2 42 51.70	2.2711	13 34 47.9	7.608
18	1 00 56.19	2.0792	6 38 11.0	9.768	18	2 45 08.11	2.2758	13 42 22.3	7.538
19	1 03 01.03	2.0823	6 47 56.4	9.744	19	2 47 24.80	2.2807	13 49 52.5	7.468
20	1 05 06.06	2.0855	6 57 40.3	9.718	20	2 49 41.79	2.2855	13 57 18.4	7.395
21	1 07 11.29	2.0888	7 07 22.6	9.691	21	2 51 59.06	2.2903	14 04 39.9	7.323
22	1 09 16.72	2.0922	7 17 03.2	9.663	22	2 54 16.63	2.2953	14 11 57.1	7.249
23	1 11 22.35	2.0955	7 26 42.2	9.636	23	2 56 34.49	2.3001	14 19 09.8	7.173
24	1 13 28.18	+ 2.0989	N. 7 36 19.5	+ 9.607	24	2 58 52.64	+ 2.3049	N. 14 26 17.9	+ 7.098

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
THURSDAY 5.					SATURDAY 7.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
0	2 58 52.64	+ 2.3049	N. 14 26 17.9	+ 7.098	0	4 54 57.99	+ 2.5215	N. 18 20 00.9	+ 2.271
1	3 01 11.08	2.3058	14 33 21.5	7.021	1	4 57 29.39	2.5250	18 22 13.5	2.149
2	3 03 29.82	2.3148	14 40 20.4	6.943	2	5 00 00.99	2.5284	18 24 18.8	2.027
3	3 05 48.85	2.3196	14 47 14.6	6.863	3	5 02 32.80	2.5318	18 26 16.7	1.903
4	3 08 08.17	2.3244	14 54 04.0	6.783	4	5 05 04.81	2.5351	18 28 07.1	1.778
5	3 10 27.78	2.3293	15 00 48.6	6.703	5	5 07 37.01	2.5383	18 29 50.1	1.653
6	3 12 47.69	2.3343	15 07 28.3	6.620	6	5 10 09.40	2.5414	18 31 25.5	1.528
7	3 15 07.90	2.3393	15 14 03.0	6.537	7	5 12 41.98	2.5445	18 32 53.4	1.403
8	3 17 28.40	2.3441	15 20 32.7	6.453	8	5 15 14.74	2.5475	18 34 13.8	1.277
9	3 19 49.19	2.3489	15 26 57.3	6.367	9	5 17 47.68	2.5504	18 35 26.6	1.149
10	3 22 10.27	2.3538	15 33 16.7	6.281	10	5 20 20.79	2.5533	18 36 31.7	1.021
11	3 24 31.65	2.3588	15 39 31.0	6.194	11	5 22 54.07	2.5560	18 37 29.1	0.893
12	3 26 53.32	2.3637	15 45 39.9	6.104	12	5 25 27.51	2.5587	18 38 18.8	0.764
13	3 29 15.29	2.3685	15 51 43.5	6.015	13	5 28 01.11	2.5613	18 39 00.8	0.635
14	3 31 37.54	2.3733	15 57 41.7	5.924	14	5 30 34.86	2.5638	18 39 35.0	0.506
15	3 34 00.09	2.3783	16 03 34.4	5.833	15	5 33 08.76	2.5662	18 40 01.5	0.376
16	3 36 22.93	2.3831	16 09 21.6	5.740	16	5 35 42.80	2.5685	18 40 20.1	0.245
17	3 38 46.06	2.3879	16 15 03.2	5.646	17	5 38 16.98	2.5708	18 40 30.9	+ 0.114
18	3 41 09.48	2.3928	16 20 39.1	5.552	18	5 40 51.29	2.5729	18 40 33.8	- 0.017
19	3 43 33.19	2.3975	16 26 09.4	5.457	19	5 43 25.73	2.5750	18 40 28.9	0.148
20	3 45 57.18	2.4023	16 31 33.9	5.359	20	5 46 00.29	2.5770	18 40 16.1	0.279
21	3 48 21.46	2.4070	16 36 52.5	5.261	21	5 48 34.97	2.5789	18 39 55.4	0.411
22	3 50 46.02	2.4118	16 42 05.2	5.163	22	5 51 09.76	2.5808	18 39 26.8	0.543
23	3 53 10.87	+ 2.4165	N. 16 47 12.0	+ 5.063	23	5 53 44.66	+ 2.5824	N. 18 38 50.2	- 0.676
FRIDAY 6.					SUNDAY 8.				
0	3 55 36.00	+ 2.4212	N. 16 52 12.8	+ 4.963	0	5 56 19.65	+ 2.5840	N. 18 38 05.7	- 0.808
1	3 58 01.41	2.4258	16 57 07.5	4.861	1	5 58 54.74	2.5855	18 37 13.2	0.941
2	4 00 27.10	2.4305	17 01 56.1	4.758	2	6 01 29.91	2.5869	18 36 12.8	1.073
3	4 02 53.07	2.4351	17 06 38.4	4.654	3	6 04 05.17	2.5883	18 35 04.4	1.207
4	4 05 19.31	2.4396	17 11 14.6	4.550	4	6 06 40.51	2.5896	18 33 48.0	1.340
5	4 07 45.82	2.4441	17 15 44.4	4.443	5	6 09 15.92	2.5907	18 32 23.6	1.473
6	4 10 12.60	2.4486	17 20 07.8	4.337	6	6 11 51.39	2.5917	18 30 51.2	1.607
7	4 12 39.65	2.4531	17 24 24.8	4.230	7	6 14 26.92	2.5927	18 29 10.8	1.740
8	4 15 06.97	2.4575	17 28 35.4	4.122	8	6 17 02.51	2.5935	18 27 22.4	1.873
9	4 17 34.55	2.4618	17 32 39.4	4.013	9	6 19 38.14	2.5943	18 25 26.0	2.006
10	4 20 02.39	2.4662	17 36 36.9	3.903	10	6 22 13.82	2.5949	18 23 21.7	2.139
11	4 22 30.49	2.4705	17 40 27.7	3.791	11	6 24 49.53	2.5955	18 21 09.3	2.273
12	4 24 58.85	2.4748	17 44 11.8	3.679	12	6 27 25.28	2.5960	18 18 48.9	2.406
13	4 27 27.46	2.4789	17 47 49.2	3.566	13	6 30 01.05	2.5963	18 16 20.6	2.538
14	4 29 56.32	2.4831	17 51 19.7	3.452	14	6 32 36.84	2.5967	18 13 44.4	2.670
15	4 32 25.43	2.4872	17 54 43.4	3.338	15	6 35 12.65	2.5968	18 11 00.2	2.803
16	4 34 54.78	2.4912	17 58 00.3	3.223	16	6 37 48.46	2.5969	18 08 08.1	2.934
17	4 37 24.37	2.4952	18 01 10.2	3.107	17	6 40 24.28	2.5969	18 05 08.1	3.067
18	4 39 54.20	2.4992	18 04 13.1	2.989	18	6 43 00.09	2.5968	18 02 00.1	3.198
19	4 42 24.27	2.5031	18 07 08.9	2.872	19	6 45 35.89	2.5966	17 58 44.3	3.329
20	4 44 54.57	2.5068	18 09 57.7	2.753	20	6 48 11.68	2.5963	17 55 20.6	3.460
21	4 47 25.09	2.5106	18 12 39.3	2.634	21	6 50 47.45	2.5959	17 51 49.1	3.590
22	4 49 55.84	2.5143	18 15 13.8	2.514	22	6 53 23.19	2.5954	17 48 09.8	3.720
23	4 52 26.81	2.5179	18 17 41.0	2.393	23	6 55 58.90	2.5948	17 44 22.7	3.850
24	4 54 57.99	+ 2.5215	N. 18 20 00.9	+ 2.271	24	6 58 34.57	+ 2.5942	N. 17 40 27.8	- 3.979

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
MONDAY 9.					WEDNESDAY 11.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
0	6 58 34.57	+ 2.5942	N. 17 40 27.8	- 3.979	0	9 00 47.85	+ 2.4738	N. 12 15 27.4	- 9.160
1	7 01 10.20	2.5934	17 36 25.2	4.108	1	9 03 16.17	2.4701	12 06 15.4	9.238
2	7 03 45.78	2.5925	17 32 14.9	4.236	2	9 05 44.26	2.4663	11 56 58.8	9.316
3	7 06 21.30	2.5916	17 27 56.9	4.364	3	9 08 12.12	2.4625	11 47 37.5	9.392
4	7 08 56.77	2.5906	17 23 31.2	4.491	4	9 10 39.76	2.4587	11 38 11.7	9.467
5	7 11 32.17	2.5894	17 18 58.0	4.617	5	9 13 07.17	2.4548	11 28 41.5	9.539
6	7 14 07.50	2.5882	17 14 17.2	4.743	6	9 15 34.34	2.4509	11 19 07.0	9.611
7	7 16 42.75	2.5868	17 09 28.8	4.868	7	9 18 01.28	2.4471	11 09 28.2	9.682
8	7 19 17.92	2.5855	17 04 33.0	4.993	8	9 20 27.99	2.4432	10 59 45.2	9.750
9	7 21 53.01	2.5841	16 59 29.7	5.117	9	9 22 54.46	2.4393	10 49 58.2	9.817
10	7 24 28.01	2.5825	16 54 19.0	5.240	10	9 25 20.70	2.4353	10 40 07.2	9.883
11	7 27 02.91	2.5808	16 49 00.9	5.362	11	9 27 46.70	2.4314	10 30 12.3	9.947
12	7 29 37.71	2.5792	16 43 35.6	5.483	12	9 30 12.47	2.4275	10 20 13.6	10.009
13	7 32 12.41	2.5773	16 38 03.0	5.604	13	9 32 38.00	2.4235	10 10 11.2	10.071
14	7 34 46.99	2.5754	16 32 23.1	5.724	14	9 35 03.29	2.4195	10 00 05.1	10.131
15	7 37 21.46	2.5735	16 26 36.1	5.843	15	9 37 28.34	2.4156	9 49 55.5	10.188
16	7 39 55.81	2.5714	16 20 41.9	5.962	16	9 39 53.16	2.4116	9 39 42.5	10.245
17	7 42 30.03	2.5693	16 14 40.7	6.078	17	9 42 17.73	2.4076	9 29 26.1	10.301
18	7 45 04.12	2.5671	16 08 32.5	6.195	18	9 44 42.07	2.4037	9 19 06.4	10.355
19	7 47 38.08	2.5648	16 02 17.3	6.310	19	9 47 06.17	2.3997	9 08 43.5	10.408
20	7 50 11.90	2.5625	15 55 55.3	6.424	20	9 49 30.03	2.3957	8 58 17.5	10.458
21	7 52 45.58	2.5601	15 49 26.4	6.538	21	9 51 53.65	2.3917	8 47 48.5	10.508
22	7 55 19.11	2.5576	15 42 50.7	6.651	22	9 54 17.03	2.3877	8 37 16.6	10.555
23	7 57 52.49	+ 2.5551	N. 15 36 08.3	- 6.763	23	9 56 40.17	+ 2.3837	N. 8 26 41.9	- 10.602
TUESDAY 10.					THURSDAY 12.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
0	8 00 25.72	+ 2.5525	N. 15 29 19.2	- 6.873	0	9 59 03.07	+ 2.3798	N. 8 16 04.4	- 10.647
1	8 02 58.79	2.5498	15 22 23.5	6.983	1	10 01 25.74	2.3758	8 05 24.3	10.690
2	8 05 31.69	2.5470	15 15 21.3	7.090	2	10 03 48.17	2.3718	7 54 41.6	10.733
3	8 08 04.43	2.5443	15 08 12.7	7.197	3	10 06 10.36	2.3679	7 43 56.4	10.773
4	8 10 37.00	2.5414	15 00 57.7	7.303	4	10 08 32.32	2.3640	7 33 08.9	10.811
5	8 13 09.40	2.5385	14 53 36.4	7.408	5	10 10 54.04	2.3601	7 22 19.1	10.849
6	8 15 41.62	2.5355	14 46 08.8	7.512	6	10 13 15.53	2.3562	7 11 27.0	10.886
7	8 18 13.66	2.5324	14 38 35.0	7.614	7	10 15 36.78	2.3522	7 00 32.8	10.920
8	8 20 45.51	2.5293	14 30 55.1	7.716	8	10 17 57.79	2.3483	6 49 36.6	10.953
9	8 23 17.17	2.5262	14 23 09.1	7.816	9	10 20 18.58	2.3445	6 38 38.4	10.985
10	8 25 48.65	2.5230	14 15 17.2	7.914	10	10 22 39.13	2.3406	6 27 38.4	11.015
11	8 28 19.93	2.5198	14 07 19.4	8.012	11	10 24 59.45	2.3368	6 16 36.6	11.043
12	8 30 51.02	2.5165	13 59 15.8	8.108	12	10 27 19.54	2.3329	6 05 33.2	11.071
13	8 33 21.91	2.5131	13 51 06.4	8.203	13	10 29 39.40	2.3292	5 54 28.1	11.098
14	8 35 52.59	2.5097	13 42 51.4	8.297	14	10 31 59.04	2.3254	5 43 21.5	11.122
15	8 38 23.07	2.5063	13 34 30.8	8.389	15	10 34 18.45	2.3216	5 32 13.5	11.145
16	8 40 53.35	2.5029	13 26 04.7	8.480	16	10 36 37.03	2.3178	5 21 04.1	11.167
17	8 43 23.42	2.4993	13 17 33.2	8.570	17	10 38 56.59	2.3142	5 09 53.5	11.187
18	8 45 53.27	2.4958	13 08 56.3	8.658	18	10 41 15.33	2.3105	4 58 41.7	11.207
19	8 48 22.91	2.4923	13 00 14.2	8.745	19	10 43 33.85	2.3068	4 47 28.7	11.224
20	8 50 52.34	2.4887	12 51 26.9	8.831	20	10 45 52.15	2.3032	4 36 14.8	11.240
21	8 53 21.55	2.4850	12 42 34.5	8.916	21	10 48 10.23	2.2995	4 24 59.9	11.255
22	8 55 50.54	2.4813	12 33 37.0	8.999	22	10 50 28.09	2.2959	4 13 44.2	11.268
23	8 58 19.31	2.4776	12 24 34.6	9.080	23	10 52 45.74	2.2924	4 02 27.7	11.281
24	9 00 47.85	+ 2.4738	N. 12 15 27.4	- 9.160	24	10 55 03.18	+ 2.2888	N. 3 51 10.5	- 11.292

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
FRIDAY 13.					SUNDAY 15.				
0	h m s	s	N. ° ' "	"	0	h m s	s	S. ° ' "	"
0	10 55 03.18	+ 2.2888	N. 3 51 10.5	- 11.292	0	12 41 25.93	+ 2.1568	S. 5 00 17.3	- 10.438
1	10 57 20.40	2.2853	3 39 52.7	11.301	1	12 43 35.28	2.1550	5 10 42.3	10.396
2	10 59 37.41	2.2818	3 28 34.4	11.309	2	12 45 44.53	2.1532	5 21 04.8	10.353
3	11 01 54.22	2.2784	3 17 15.6	11.317	3	12 47 53.66	2.1513	5 31 24.7	10.310
4	11 04 10.82	2.2749	3 05 56.4	11.323	4	12 50 02.68	2.1495	5 41 42.0	10.266
5	11 06 27.21	2.2715	2 54 36.9	11.326	5	12 52 11.60	2.1478	5 51 56.6	10.221
6	11 08 43.40	2.2682	2 43 17.3	11.328	6	12 54 20.41	2.1460	6 02 08.5	10.175
7	11 10 59.39	2.2648	2 31 57.5	11.331	7	12 56 29.12	2.1443	6 12 17.6	10.128
8	11 13 15.18	2.2615	2 20 37.6	11.332	8	12 58 37.73	2.1428	6 22 23.8	10.080
9	11 15 30.77	2.2582	2 09 17.7	11.331	9	13 00 46.25	2.1412	6 32 27.2	10.033
10	11 17 46.16	2.2549	1 57 57.9	11.329	10	13 02 54.67	2.1395	6 42 27.7	9.984
11	11 20 01.36	2.2517	1 46 38.2	11.326	11	13 05 02.99	2.1379	6 52 25.3	9.935
12	11 22 16.37	2.2486	1 35 18.8	11.321	12	13 07 11.22	2.1364	7 02 19.9	9.884
13	11 24 31.19	2.2454	1 23 59.7	11.315	13	13 09 19.36	2.1349	7 12 11.4	9.834
14	11 26 45.82	2.2423	1 12 41.0	11.308	14	13 11 27.41	2.1335	7 21 59.9	9.782
15	11 29 00.26	2.2392	1 01 22.7	11.300	15	13 13 35.38	2.1321	7 31 45.2	9.729
16	11 31 14.52	2.2362	0 50 05.0	11.291	16	13 15 43.26	2.1307	7 41 27.4	9.677
17	11 33 28.60	2.2331	0 38 47.8	11.281	17	13 17 51.06	2.1293	7 51 06.4	9.623
18	11 35 42.49	2.2301	0 27 31.3	11.268	18	13 19 58.77	2.1279	8 00 42.2	9.569
19	11 37 56.21	2.2272	0 16 15.6	11.256	19	13 22 06.41	2.1267	8 10 14.7	9.514
20	11 40 09.75	2.2242	N. 0 05 00.6	11.243	20	13 24 13.97	2.1253	8 19 43.9	9.458
21	11 42 23.11	2.2213	S. 0 06 13.5	11.228	21	13 26 21.45	2.1241	8 29 09.7	9.403
22	11 44 36.31	2.2185	0 17 26.7	11.211	22	13 28 28.86	2.1229	8 38 32.2	9.346
23	11 46 49.33	+ 2.2157	S. 0 28 38.8	- 11.193	23	13 30 36.20	+ 2.1218	S. 8 47 51.2	- 9.288
SATURDAY 14.					MONDAY 16.				
0	h m s	s	S. ° ' "	"	0	h m s	s	S. ° ' "	"
0	11 49 02.19	+ 2.2129	S. 0 39 49.9	- 11.176	0	13 32 43.47	+ 2.1206	S. 8 57 06.7	- 9.230
1	11 51 14.88	2.2102	0 50 59.9	11.156	1	13 34 50.67	2.1194	9 06 18.8	9.172
2	11 53 27.41	2.2074	1 02 08.6	11.135	2	13 36 57.80	2.1183	9 15 27.3	9.113
3	11 55 39.77	2.2048	1 13 16.1	11.114	3	13 39 04.87	2.1173	9 24 32.3	9.053
4	11 57 51.98	2.2022	1 24 22.3	11.093	4	13 41 11.87	2.1163	9 33 33.7	8.993
5	12 00 04.03	2.1995	1 35 27.1	11.068	5	13 43 18.82	2.1153	9 42 31.5	8.933
6	12 02 15.92	2.1969	1 46 30.5	11.043	6	13 45 25.70	2.1142	9 51 25.6	8.871
7	12 04 27.66	2.1944	1 57 32.3	11.018	7	13 47 32.52	2.1133	10 00 16.0	8.808
8	12 06 39.25	2.1919	2 08 32.6	10.991	8	13 49 39.29	2.1123	10 09 02.6	8.746
9	12 08 50.69	2.1894	2 19 31.2	10.963	9	13 51 46.00	2.1114	10 17 45.5	8.683
10	12 11 01.98	2.1870	2 30 28.2	10.935	10	13 53 52.66	2.1106	10 26 24.6	8.620
11	12 13 13.13	2.1847	2 41 23.4	10.906	11	13 55 59.27	2.1097	10 34 59.9	8.557
12	12 15 24.14	2.1823	2 52 16.9	10.876	12	13 58 05.82	2.1088	10 43 31.4	8.493
13	12 17 35.01	2.1800	3 03 08.5	10.843	13	14 00 12.33	2.1080	10 51 59.0	8.427
14	12 19 45.74	2.1777	3 13 58.1	10.811	14	14 02 18.78	2.1072	11 00 22.6	8.361
15	12 21 56.33	2.1754	3 24 45.8	10.778	15	14 04 25.19	2.1065	11 08 42.3	8.296
16	12 24 06.79	2.1733	3 35 31.4	10.743	16	14 06 31.56	2.1058	11 16 58.1	8.230
17	12 26 17.12	2.1711	3 46 15.0	10.708	17	14 08 37.88	2.1050	11 25 09.9	8.163
18	12 28 27.32	2.1689	3 56 56.4	10.673	18	14 10 44.16	2.1043	11 33 17.7	8.096
19	12 30 37.39	2.1668	4 07 35.7	10.636	19	14 12 50.40	2.1037	11 41 21.4	8.028
20	12 32 47.34	2.1648	4 18 12.7	10.598	20	14 14 56.60	2.1030	11 49 21.0	7.959
21	12 34 57.17	2.1628	4 28 47.4	10.559	21	14 17 02.76	2.1024	11 57 16.5	7.891
22	12 37 06.87	2.1608	4 39 19.8	10.520	22	14 19 08.89	2.1018	12 05 07.9	7.822
23	12 39 16.46	2.1588	4 49 49.8	10.479	23	14 21 14.98	2.1012	12 12 55.1	7.753
24	12 41 25.93	+ 2.1568	S. 5 00 17.3	- 10.438	24	14 23 21.03	+ 2.1006	S. 12 20 38.2	- 7.683

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
TUESDAY 17.					THURSDAY 19.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
0	14 23 21.03	+ 2.1006	S. 12 20 38.2	- 7.683	1	16 03 48.12	+ 2.0885	S. 17 02 37.3	- 3.963
1	14 25 27.05	2.1001	12 28 17.1	7.613	1	16 05 53.43	2.0884	17 06 32.6	3.880
2	14 27 33.04	2.0995	12 35 51.7	7.542	2	16 07 58.73	2.0883	17 10 22.9	3.797
3	14 29 38.99	2.0990	12 43 22.1	7.472	3	16 10 04.03	2.0883	17 14 08.2	3.713
4	14 31 44.92	2.0985	12 50 48.3	7.400	4	16 12 09.32	2.0881	17 17 48.5	3.630
5	14 33 50.81	2.0980	12 58 10.1	7.328	5	16 14 14.60	2.0880	17 21 23.8	3.547
6	14 35 56.68	2.0976	13 05 27.6	7.256	6	16 16 19.88	2.0879	17 24 54.1	3.463
7	14 38 02.52	2.0972	13 12 40.8	7.183	7	16 18 25.15	2.0878	17 28 19.4	3.379
8	14 40 08.34	2.0968	13 19 49.6	7.111	8	16 20 30.41	2.0877	17 31 39.6	3.295
9	14 42 14.13	2.0963	13 26 54.1	7.038	9	16 22 35.67	2.0876	17 34 54.8	3.211
10	14 44 19.90	2.0959	13 33 54.1	6.963	10	16 24 40.92	2.0874	17 38 04.9	3.127
11	14 46 25.64	2.0955	13 40 49.7	6.889	11	16 26 46.16	2.0873	17 41 10.0	3.043
12	14 48 31.36	2.0952	13 47 40.8	6.815	12	16 28 51.39	2.0872	17 44 10.0	2.958
13	14 50 37.06	2.0948	13 54 27.5	6.741	13	16 30 56.62	2.0870	17 47 04.9	2.873
14	14 52 42.74	2.0945	14 01 09.7	6.666	14	16 33 01.83	2.0868	17 49 54.8	2.789
15	14 54 48.40	2.0942	14 07 47.4	6.591	15	16 35 07.04	2.0867	17 52 39.6	2.704
16	14 56 54.04	2.0938	14 14 20.6	6.516	16	16 37 12.24	2.0867	17 55 19.3	2.619
17	14 58 59.66	2.0936	14 20 49.3	6.440	17	16 39 17.44	2.0865	17 57 53.9	2.534
18	15 01 05.27	2.0933	14 27 13.4	6.363	18	16 41 22.62	2.0863	18 00 23.4	2.449
19	15 03 10.86	2.0930	14 33 32.9	6.287	19	16 43 27.79	2.0861	18 02 47.8	2.363
20	15 05 16.43	2.0928	14 39 47.8	6.210	20	16 45 32.95	2.0859	18 05 07.0	2.278
21	15 07 21.99	2.0925	14 45 58.1	6.133	21	16 47 38.10	2.0858	18 07 21.2	2.194
22	15 09 27.53	2.0923	14 52 03.8	6.056	22	16 49 43.24	2.0856	18 09 30.3	2.108
23	15 11 33.06	+ 2.0921	S. 14 58 04.8	- 5.978	23	16 51 48.37	+ 2.0854	S. 18 11 34.2	- 2.023
WEDNESDAY 18.					FRIDAY 20.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
0	15 13 38.58	+ 2.0918	S. 15 04 01.1	- 5.900	1	16 53 53.49	+ 2.0852	S. 18 13 33.1	- 1.938
1	15 15 44.08	2.0917	15 09 52.8	5.823	1	16 55 58.60	2.0850	18 15 26.8	1.853
2	15 17 49.58	2.0915	15 15 39.8	5.744	2	16 58 03.69	2.0848	18 17 15.4	1.768
3	15 19 55.06	2.0913	15 21 22.1	5.665	3	17 00 08.77	2.0846	18 18 58.9	1.682
4	15 22 00.53	2.0910	15 26 59.6	5.586	4	17 02 13.84	2.0843	18 20 37.2	1.596
5	15 24 05.98	2.0908	15 32 32.4	5.507	5	17 04 18.89	2.0841	18 22 10.4	1.511
6	15 26 11.43	2.0907	15 38 00.4	5.428	6	17 06 23.93	2.0838	18 23 38.5	1.425
7	15 28 16.87	2.0906	15 43 23.7	5.348	7	17 08 28.95	2.0836	18 25 01.4	1.339
8	15 30 22.30	2.0904	15 48 42.2	5.268	8	17 10 33.96	2.0833	18 26 19.2	1.254
9	15 32 27.72	2.0903	15 53 55.9	5.188	9	17 12 38.95	2.0831	18 27 31.9	1.168
10	15 34 33.13	2.0901	15 59 04.8	5.108	10	17 14 43.93	2.0828	18 28 39.4	1.083
11	15 36 38.53	2.0899	16 04 08.9	5.028	11	17 16 48.89	2.0825	18 29 41.8	0.998
12	15 38 43.92	2.0898	16 09 08.1	4.947	12	17 18 53.83	2.0823	18 30 39.1	0.912
13	15 40 49.31	2.0898	16 14 02.5	4.866	13	17 20 58.76	2.0819	18 31 31.2	0.826
14	15 42 54.69	2.0896	16 18 52.0	4.785	14	17 23 03.66	2.0816	18 32 18.2	0.740
15	15 45 00.06	2.0895	16 23 36.7	4.703	15	17 25 08.55	2.0812	18 33 00.0	0.654
16	15 47 05.43	2.0894	16 28 16.4	4.622	16	17 27 13.41	2.0809	18 33 36.7	0.569
17	15 49 10.79	2.0893	16 32 51.3	4.540	17	17 29 18.26	2.0807	18 34 08.3	0.484
18	15 51 16.14	2.0892	16 37 21.2	4.458	18	17 31 23.09	2.0803	18 34 34.8	0.398
19	15 53 21.49	2.0891	16 41 46.2	4.376	19	17 33 27.89	2.0798	18 34 56.1	0.313
20	15 55 26.83	2.0889	16 46 06.3	4.294	20	17 35 32.67	2.0794	18 35 12.3	0.228
21	15 57 32.16	2.0888	16 50 21.5	4.212	21	17 37 37.42	2.0791	18 35 23.4	0.142
22	15 59 37.49	2.0888	16 54 31.7	4.129	22	17 39 42.16	2.0788	18 35 29.3	- 0.057
23	16 01 42.81	2.0886	16 58 37.0	4.047	23	17 41 46.87	2.0783	18 35 30.2	+ 0.028
24	16 03 48.12	+ 2.0885	S. 17 02 37.3	- 3.963	24	17 43 51.55	+ 2.0778	S. 18 35 25.9	+ 0.114

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
SATURDAY 21.					MONDAY 23.				
	h m s	s	° ' "	"		h m s	s	° ' "	"
0	17 43 51.55	+ 2.0778	S. 18 35 25.9	+ 0.114	0	19 22 54.86	+ 2.0459	S. 16 53 52.6	+ 4.053
1	17 45 56.21	2.0774	18 35 16.5	0.199	1	19 24 57.59	2.0450	16 49 47.1	4.130
2	17 48 00.84	2.0770	18 35 02.0	0.284	2	19 27 00.26	2.0441	16 45 37.0	4.207
3	17 50 05.45	2.0766	18 34 42.4	0.369	3	19 29 02.88	2.0433	16 41 22.3	4.283
4	17 52 10.03	2.0761	18 34 17.7	0.454	4	19 31 05.45	2.0424	16 37 03.1	4.358
5	17 54 14.58	2.0756	18 33 47.9	0.539	5	19 33 07.97	2.0416	16 32 39.3	4.435
6	17 56 19.10	2.0751	18 33 13.0	0.624	6	19 35 10.44	2.0407	16 28 10.9	4.511
7	17 58 23.59	2.0747	18 32 33.0	0.708	7	19 37 12.85	2.0398	16 23 38.0	4.586
8	18 00 28.06	2.0742	18 31 48.0	0.793	8	19 39 15.21	2.0388	16 19 00.6	4.661
9	18 02 32.49	2.0736	18 30 57.8	0.878	9	19 41 17.51	2.0380	16 14 18.7	4.735
10	18 04 36.89	2.0730	18 30 02.6	0.963	10	19 43 19.77	2.0372	16 09 32.4	4.809
11	18 06 41.25	2.0725	18 29 02.3	1.047	11	19 45 21.97	2.0362	16 04 41.6	4.884
12	18 08 45.59	2.0720	18 27 57.0	1.131	12	19 47 24.11	2.0353	15 59 46.3	4.958
13	18 10 49.89	2.0714	18 26 46.6	1.215	13	19 49 26.20	2.0344	15 54 46.7	5.030
14	18 12 54.16	2.0709	18 25 31.2	1.299	14	19 51 28.24	2.0336	15 49 42.7	5.103
15	18 14 58.40	2.0703	18 24 10.7	1.383	15	19 53 30.23	2.0327	15 44 34.3	5.177
16	18 17 02.59	2.0696	18 22 45.2	1.467	16	19 55 32.16	2.0318	15 39 21.5	5.249
17	18 19 06.75	2.0691	18 21 14.7	1.551	17	19 57 34.04	2.0308	15 34 04.4	5.321
18	18 21 10.88	2.0685	18 19 39.1	1.634	18	19 59 35.86	2.0299	15 28 43.0	5.392
19	18 23 14.97	2.0678	18 17 58.6	1.718	19	20 01 37.63	2.0291	15 23 17.4	5.463
20	18 25 19.02	2.0672	18 16 13.0	1.801	20	20 03 39.35	2.0282	15 17 47.5	5.534
21	18 27 23.03	2.0666	18 14 22.5	1.883	21	20 05 41.01	2.0273	15 12 13.3	5.605
22	18 29 27.01	2.0659	18 12 27.0	1.967	22	20 07 42.62	2.0264	15 06 34.9	5.675
23	18 31 30.94	+ 2.0652	S. 18 10 26.5	+ 2.049	23	20 09 44.18	+ 2.0256	S. 15 00 52.3	+ 5.745
SUNDAY 22.					TUESDAY 24.				
	h m s	s	° ' "	"		h m s	s	° ' "	"
0	18 33 34.83	+ 2.0645	S. 18 08 21.1	+ 2.132	0	20 11 45.69	+ 2.0247	S. 14 55 05.5	+ 5.814
1	18 35 38.68	2.0638	18 06 10.7	2.214	1	20 13 47.14	2.0238	14 49 14.6	5.883
2	18 37 42.49	2.0632	18 03 55.4	2.296	2	20 15 48.54	2.0229	14 43 19.5	5.952
3	18 39 46.26	2.0625	18 01 35.2	2.378	3	20 17 49.89	2.0221	14 37 20.4	6.019
4	18 41 49.99	2.0618	17 59 10.0	2.461	4	20 19 51.19	2.0212	14 31 17.2	6.087
5	18 43 53.68	2.0611	17 56 39.9	2.543	5	20 21 52.43	2.0203	14 25 09.9	6.155
6	18 45 57.32	2.0603	17 54 04.9	2.623	6	20 23 53.62	2.0194	14 18 58.6	6.222
7	18 48 00.91	2.0595	17 51 25.1	2.704	7	20 25 54.76	2.0186	14 12 43.3	6.288
8	18 50 04.46	2.0588	17 48 40.4	2.786	8	20 27 55.85	2.0178	14 06 24.0	6.354
9	18 52 07.97	2.0581	17 45 50.8	2.868	9	20 29 56.89	2.0169	14 00 00.8	6.420
10	18 54 11.43	2.0573	17 42 56.3	2.948	10	20 31 57.88	2.0161	13 53 33.6	6.486
11	18 56 14.85	2.0566	17 39 57.0	3.028	11	20 33 58.82	2.0153	13 47 02.5	6.550
12	18 58 18.22	2.0558	17 36 52.9	3.108	12	20 35 59.71	2.0144	13 40 27.6	6.614
13	19 00 21.54	2.0549	17 33 44.0	3.188	13	20 38 00.55	2.0137	13 33 48.8	6.679
14	19 02 24.81	2.0542	17 30 30.3	3.268	14	20 40 01.35	2.0128	13 27 06.1	6.743
15	19 04 28.04	2.0534	17 27 11.8	3.348	15	20 42 02.09	2.0120	13 20 19.7	6.805
16	19 06 31.22	2.0526	17 23 48.5	3.428	16	20 44 02.79	2.0113	13 13 29.5	6.868
17	19 08 34.35	2.0518	17 20 20.5	3.506	17	20 46 03.44	2.0104	13 06 35.5	6.931
18	19 10 37.43	2.0509	17 16 47.8	3.585	18	20 48 04.04	2.0097	12 59 37.8	6.993
19	19 12 40.46	2.0501	17 13 10.3	3.664	19	20 50 04.60	2.0089	12 52 36.4	7.053
20	19 14 43.44	2.0493	17 09 28.1	3.743	20	20 52 05.11	2.0082	12 45 31.4	7.114
21	19 16 46.37	2.0484	17 05 41.2	3.820	21	20 54 05.58	2.0074	12 38 22.7	7.175
22	19 18 49.25	2.0476	17 01 49.7	3.898	22	20 56 06.00	2.0067	12 31 10.4	7.235
23	19 20 52.08	2.0468	16 57 53.5	3.976	23	20 58 06.38	2.0060	12 23 54.5	7.294
24	19 22 54.86	+ 2.0459	S. 16 53 52.6	+ 4.053	24	21 00 06.72	+ 2.0053	S. 12 16 35.1	+ 7.353

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
WEDNESDAY 25.					FRIDAY 27.				
0	21 00 06.72	+ 2.0053	S. 12 16 35.1	+ 7.353	0	22 35 52.32	+ 1.9927	S. 5 25 57.6	+ 9.532
1	21 02 07.02	2.0046	12 09 12.2	7.411	1	22 37 51.89	1.9930	5 16 24.8	9.563
2	21 04 07.27	2.0039	12 01 45.8	7.469	2	22 39 51.48	1.9934	5 06 50.1	9.593
3	21 06 07.49	2.0033	11 54 15.9	7.527	3	22 41 51.10	1.9938	4 57 13.7	9.621
4	21 08 07.67	2.0027	11 46 42.6	7.583	4	22 43 50.74	1.9942	4 47 35.6	9.649
5	21 10 07.81	2.0020	11 39 05.9	7.640	5	22 45 50.40	1.9946	4 37 55.8	9.677
6	21 12 07.91	2.0013	11 31 25.8	7.696	6	22 47 50.09	1.9951	4 28 14.3	9.704
7	21 14 07.97	2.0008	11 23 42.4	7.751	7	22 49 49.81	1.9956	4 18 31.3	9.730
8	21 16 08.00	2.0002	11 15 55.7	7.806	8	22 51 49.56	1.9961	4 08 46.7	9.755
9	21 18 07.99	1.9996	11 08 05.7	7.861	9	22 53 49.34	1.9967	3 59 00.7	9.780
10	21 20 07.95	1.9990	11 00 12.4	7.915	10	22 55 49.16	1.9973	3 49 13.1	9.805
11	21 22 07.87	1.9984	10 52 15.9	7.968	11	22 57 49.01	1.9978	3 39 24.1	9.828
12	21 24 07.76	1.9979	10 44 16.2	8.021	12	22 59 48.90	1.9985	3 29 33.8	9.850
13	21 26 07.62	1.9974	10 36 13.4	8.073	13	23 01 48.83	1.9992	3 19 42.1	9.872
14	21 28 07.45	1.9970	10 28 07.5	8.124	14	23 03 48.80	1.9998	3 09 49.1	9.893
15	21 30 07.26	1.9965	10 19 58.5	8.175	15	23 05 48.81	2.0006	2 59 54.9	9.914
16	21 32 07.03	1.9960	10 11 46.5	8.226	16	23 07 48.87	2.0014	2 49 59.4	9.934
17	21 34 06.78	1.9956	10 03 31.4	8.277	17	23 09 48.98	2.0023	2 40 02.8	9.953
18	21 36 06.50	1.9952	9 55 13.3	8.326	18	23 11 49.14	2.0032	2 30 05.1	9.971
19	21 38 06.20	1.9948	9 46 52.3	8.374	19	23 13 49.35	2.0039	2 20 06.3	9.988
20	21 40 05.87	1.9943	9 38 28.4	8.423	20	23 15 49.61	2.0048	2 10 06.5	10.005
21	21 42 05.52	1.9939	9 30 01.6	8.470	21	23 17 49.93	2.0058	2 00 05.7	10.022
22	21 44 05.14	1.9936	9 21 32.0	8.518	22	23 19 50.31	2.0068	1 50 03.9	10.037
23	21 46 04.75	+ 1.9933	S. 9 12 59.5	+ 8.565	23	23 21 50.74	+ 2.0078	S. 1 40 01.3	+ 10.051
THURSDAY 26.					SATURDAY 28.				
0	21 48 04.34	+ 1.9930	S. 9 04 24.2	+ 8.611	0	23 23 51.24	+ 2.0088	S. 1 29 57.8	+ 10.065
1	21 50 03.91	1.9927	8 55 46.2	8.656	1	23 25 51.80	2.0098	1 19 53.5	10.078
2	21 52 03.46	1.9924	8 47 05.5	8.701	2	23 27 52.42	2.0109	1 09 48.4	10.091
3	21 54 03.00	1.9922	8 38 22.1	8.745	3	23 29 53.11	2.0121	0 59 42.6	10.102
4	21 56 02.53	1.9920	8 29 36.1	8.789	4	23 31 53.87	2.0133	0 49 36.2	10.113
5	21 58 02.04	1.9918	8 20 47.4	8.832	5	23 33 54.70	2.0145	0 39 29.1	10.123
6	22 00 01.54	1.9916	8 11 56.2	8.874	6	23 35 55.61	2.0158	0 29 21.5	10.132
7	22 02 01.03	1.9915	8 03 02.5	8.917	7	23 37 56.59	2.0170	0 19 13.3	10.141
8	22 04 00.52	1.9914	7 54 06.2	8.958	8	23 39 57.65	2.0183	S. 0 09 04.6	10.148
9	22 06 00.00	1.9913	7 45 07.5	8.998	9	23 41 58.79	2.0197	N. 0 01 04.5	10.155
10	22 07 59.47	1.9912	7 36 06.4	9.038	10	23 44 00.01	2.0211	0 11 14.0	10.161
11	22 09 58.94	1.9911	7 27 02.9	9.078	11	23 46 01.32	2.0225	0 21 23.8	10.166
12	22 11 58.40	1.9910	7 17 57.0	9.118	12	23 48 02.71	2.0239	0 31 33.9	10.171
13	22 13 57.86	1.9910	7 08 48.8	9.155	13	23 50 04.19	2.0254	0 41 44.3	10.174
14	22 15 57.32	1.9910	6 59 38.4	9.193	14	23 52 05.76	2.0269	0 51 54.8	10.177
15	22 17 56.79	1.9912	6 50 25.7	9.230	15	23 54 07.42	2.0285	1 02 05.5	10.179
16	22 19 56.26	1.9912	6 41 10.8	9.266	16	23 56 09.18	2.0301	1 12 16.3	10.181
17	22 21 55.73	1.9913	6 31 53.8	9.301	17	23 58 11.03	2.0317	1 22 27.2	10.182
18	22 23 55.21	1.9914	6 22 34.7	9.336	18	0 00 12.98	2.0334	1 32 38.1	10.181
19	22 25 54.70	1.9916	6 13 13.5	9.371	19	0 02 15.04	2.0352	1 42 48.9	10.179
20	22 27 54.20	1.9918	6 03 50.2	9.405	20	0 04 17.20	2.0368	1 52 59.6	10.178
21	22 29 53.71	1.9919	5 54 24.9	9.438	21	0 06 19.46	2.0386	2 03 10.2	10.175
22	22 31 53.23	1.9922	5 44 57.7	9.469	22	0 08 21.83	2.0404	2 13 20.6	10.171
23	22 33 52.77	1.9924	5 35 28.6	9.501	23	0 10 24.31	2.0423	2 23 30.7	10.167
24	22 35 52.32	+ 1.9927	S. 5 25 57.6	+ 9.532	24	0 12 26.90	+ 2.0442	N. 2 33 40.6	+ 10.162

GREENWICH MEAN TIME.

PHASES OF THE MOON.

	d	h	m
☾ First Quarter	Feb. 4	22	12.5
◯ Full Moon	11	12	57.9
☾ Last Quarter	18	18	22.6
● New Moon	26	22	19.6

☾ Perigee	Feb. 10	01.3
☾ Apogee	22	01.0

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Noon.	P. L. of Diff.	IIIh	P. L. of Diff.	VIh	P. L. of Diff.	IXh	P. L. of Diff.
			° ' "		° ' "		° ' "		° ' "	
1	SUN	W.	42 52 12	3197	44 18 25	3187	45 44 50	3174	47 11 30	3163
	Aldebaran	E.	74 25 31	2801	72 51 05	2793	71 16 28	2784	69 41 39	2775
	Pollux	E.	117 05 48	2915	115 33 48	2902	114 01 32	2891	112 29 01	2880
2	SUN	W.	54 28 16	3105	55 56 20	3093	57 24 38	3081	58 53 11	3068
	Aldebaran	E.	61 44 27	2726	60 08 22	2716	58 32 03	2706	56 55 31	2695
	Pollux	E.	104 42 46	2821	103 08 46	2810	101 34 31	2798	100 00 01	2787
3	SUN	W.	66 19 47	3005	67 49 53	2992	69 20 16	2978	70 50 56	2965
	α Pegasi	W.	33 28 22	3335	34 51 53	3270	36 16 40	3209	37 42 39	3153
	Aldebaran	E.	48 49 10	2640	47 11 09	2628	45 32 52	2616	43 54 19	2604
	Pollux	E.	92 03 43	2729	90 27 41	2717	88 51 24	2704	87 14 50	2693
4	SUN	W.	78 28 32	2896	80 00 56	2881	81 33 39	2867	83 06 40	2852
	α Pegasi	W.	45 07 30	2939	46 38 59	2904	48 11 13	2871	49 44 09	2840
	Aldebaran	E.	35 37 26	2543	33 57 13	2530	32 16 42	2517	30 35 53	2505
	Pollux	E.	79 08 07	2635	77 29 59	2622	75 51 34	2610	74 12 53	2599
	Regulus	E.	115 30 27	2553	113 50 28	2540	112 10 11	2526	110 29 34	2512
5	SUN	W.	90 56 30	2779	92 31 26	2764	94 06 41	2749	95 42 16	2735
	α Pegasi	W.	57 38 10	2707	59 14 40	2684	60 51 41	2661	62 29 13	2640
	Pollux	E.	65 55 37	2543	64 15 24	2533	62 34 57	2523	60 54 16	2513
	Regulus	E.	102 01 44	2444	100 19 12	2430	98 36 20	2416	96 53 08	2403
6	SUN	W.	103 45 07	2660	105 22 41	2646	107 00 34	2631	108 38 47	2616
	α Pegasi	W.	70 43 57	2540	72 24 14	2523	74 04 55	2506	75 46 00	2489
	α Arietis	W.	27 24 34	2747	29 00 12	2690	30 37 05	2639	32 15 07	2593
	Pollux	E.	52 27 39	2472	50 45 47	2467	49 03 47	2462	47 21 40	2458
	Regulus	E.	88 12 11	2333	86 27 00	2320	84 41 29	2306	82 55 38	2293
7	SUN	W.	116 54 39	2548	118 34 45	2535	120 15 09	2522	121 55 51	2511
	α Pegasi	W.	84 17 03	2414	86 00 18	2401	87 43 51	2389	89 27 42	2376
	α Arietis	W.	40 39 06	2423	42 22 08	2395	44 05 48	2372	45 50 03	2349
	Regulus	E.	74 01 36	2229	72 13 51	2217	70 25 49	2205	68 37 29	2194
	MARS	E.	121 08 06	2263	119 21 12	2249	117 33 58	2237	115 46 25	2225
8	α Pegasi	W.	98 10 56	2328	99 56 14	2321	101 41 43	2315	103 27 21	2310
	α Arietis	W.	54 38 48	2258	56 25 50	2242	58 13 15	2228	60 01 01	2215
	Aldebaran	W.	20 36 52	2137	22 25 55	2126	24 17 15	2116	26 07 50	2106
	Regulus	E.	59 31 43	2142	57 41 48	2134	55 51 41	2125	54 01 20	2118
	MARS	E.	106 44 12	2167	104 54 55	2157	103 05 23	2147	101 15 36	2139
	Spica	E.	113 04 38	2132	111 14 27	2120	109 23 59	2111	107 33 16	2102
9	α Arietis	W.	69 04 14	2164	70 53 36	2156	72 43 10	2149	74 32 55	2143
	Aldebaran	W.	35 24 09	2067	37 15 59	2062	39 07 57	2056	41 00 04	2052
	Regulus	E.	44 46 58	2088	42 55 41	2085	41 04 19	2082	39 12 52	2081
	MARS	E.	92 03 29	2100	90 12 30	2095	88 21 23	2090	86 30 07	2085
	Spica	E.	98 16 41	2067	96 24 51	2061	94 32 52	2057	92 40 46	2053
10	α Arietis	W.	83 43 23	2127	85 33 41	2127	87 23 59	2126	89 14 18	2128
	Aldebaran	W.	50 21 59	2040	52 14 31	2039	54 07 04	2040	55 59 36	2041
	MARS	E.	77 12 25	2072	75 20 43	2072	73 29 00	2072	71 37 17	2073

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.	P. L. of Diff.	XVh	P. L. of Diff.	XVIIIh	P. L. of Diff.	XXIh	P. L. of Diff.
			° ' "		° ' "		° ' "		° ' "	
1	SUN	W.	48 38 24	3152	50 05 31	3141	51 32 51	3129	53 00 26	3116
	Aldebaran	E.	68 06 38	2765	66 31 24	2756	64 55 58	2746	63 20 19	2736
	Pollux	E.	110 56 16	2868	109 23 16	2856	107 50 01	2845	106 16 31	2833
2	SUN	W.	60 22 00	3056	61 51 04	3044	63 20 22	3031	64 49 56	3018
	Aldebaran	E.	55 18 44	2684	53 41 43	2673	52 04 27	2662	50 26 56	2651
	Pollux	E.	98 25 16	2775	96 50 16	2764	95 15 01	2752	93 39 30	2740
3	SUN	W.	72 21 53	2951	73 53 07	2939	75 24 37	2924	76 56 26	2910
	α Pegasi	W.	39 09 44	3103	40 37 50	3057	42 06 52	3014	43 36 47	2976
	Aldebaran	E.	42 15 30	2592	40 36 24	2580	38 57 02	2567	37 17 22	2556
	Pollux	E.	85 38 01	2631	84 00 56	2670	82 23 36	2658	80 46 00	2646
4	SUN	W.	84 40 00	2838	86 13 39	2824	87 47 36	2808	89 21 53	2793
	α Pegasi	W.	51 17 45	2811	52 51 58	2784	54 26 47	2756	56 02 12	2732
	Aldebaran	E.	28 54 47	2492	27 13 23	2481	25 31 43	2467	23 49 44	2455
	Pollux	E.	72 33 57	2588	70 54 45	2577	69 15 18	2565	67 35 35	2554
	Regulus	E.	108 48 38	2499	107 07 23	2486	105 25 50	2472	103 43 57	2458
5	SUN	W.	97 18 10	2719	98 54 25	2704	100 30 59	2689	102 07 53	2675
	α Pegasi	W.	64 07 14	2619	65 45 43	2598	67 24 41	2578	69 04 06	2559
	Pollux	E.	59 13 21	2504	57 32 13	2495	55 50 53	2487	54 09 21	2480
	Regulus	E.	95 09 37	2389	93 25 46	2374	91 41 34	2360	89 57 02	2347
6	SUN	W.	110 17 20	2602	111 56 12	2589	113 35 22	2575	115 14 51	2561
	α Pegasi	W.	77 27 29	2473	79 09 20	2458	80 51 33	2442	82 34 08	2428
	α Arietis	W.	33 54 11	2552	35 34 12	2515	37 15 05	2482	38 56 44	2451
	Pollux	E.	45 39 28	2457	43 57 14	2456	42 14 59	2458	40 32 46	2460
	Regulus	E.	81 09 28	2279	79 22 58	2267	77 36 10	2253	75 49 02	2241
7	SUN	W.	123 36 49	2499	125 18 03	2489	126 59 32	2477	128 41 17	2466
	α Pegasi	W.	91 11 51	2365	92 56 16	2355	94 40 56	2345	96 25 50	2337
	α Arietis	W.	47 34 51	2328	49 20 09	2309	51 05 55	2290	52 52 09	2273
	Regulus	E.	66 48 52	2182	64 59 58	2172	63 10 48	2162	61 21 23	2152
	MARS	E.	113 58 34	2212	112 10 24	2200	110 21 57	2189	108 33 13	2178
8	α Pegasi	W.	105 13 06	2305	106 58 58	2302	108 44 55	2300	110 30 55	2298
	α Arietis	W.	61 49 06	2203	63 37 29	2192	65 26 09	2181	67 15 05	2172
	Aldebaran	W.	27 58 40	2097	29 49 44	2089	31 41 00	2081	33 32 29	2073
	Regulus	E.	52 10 48	2111	50 20 05	2103	48 29 11	2098	46 38 08	2093
	MARS	E.	99 25 36	2130	97 35 22	2122	95 44 56	2114	93 54 18	2107
	Spica	E.	105 42 20	2094	103 51 12	2087	101 59 53	2079	100 08 22	2073
9	α Arietis	W.	76 22 48	2139	78 12 48	2134	80 02 55	2131	81 53 07	2128
	Aldebaran	W.	42 52 17	2048	44 44 36	2045	46 37 00	2042	48 29 28	2041
	Regulus	E.	37 21 23	2080	35 29 53	2080	33 38 23	2082	31 46 56	2085
	MARS	E.	84 38 45	2081	82 47 16	2078	80 55 43	2075	79 04 05	2073
	Spica	E.	90 48 34	2049	88 56 16	2046	87 03 54	2044	85 11 28	2042
10	α Arietis	W.	91 04 35	2130	92 54 49	2133	94 44 58	2136	96 35 02	2141
	Aldebaran	W.	57 52 07	2042	59 44 35	2046	61 36 58	2049	63 29 16	2052
	MARS	E.	69 45 36	2075	67 53 58	2077	66 02 23	2080	64 10 53	2083

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.	Noon.	P. L. of Diff.	III ^h	P. L. of Diff.	VI ^h	P. L. of Diff.	IX ^h	P. L. of Diff.
10	Spica E.	83 19 00	2042	81 26 31	2041	79 34 01	2042	77 41 32	2042
11	α Arietis W.	98 24 58	2147	100 14 46	2153	102 04 24	2161	103 53 51	2169
	Aldebaran W.	65 21 29	2057	67 13 34	2062	69 05 32	2068	70 57 20	2075
	Pollux W.	24 49 44	2593	26 28 44	2598	28 09 06	2491	29 50 35	2451
	MARS E.	62 19 28	2088	60 28 11	2094	58 37 03	2099	56 46 03	2107
	Spica E.	68 19 57	2060	66 27 56	2066	64 36 04	2072	62 44 21	2079
	Antares E.	113 46 45	2111	111 56 03	2116	110 05 28	2120	108 15 00	2126
12	Aldebaran W.	80 13 25	2118	82 03 56	2129	83 54 11	2140	85 44 09	2152
	Pollux W.	38 28 19	2354	40 13 00	2346	41 57 52	2343	43 42 49	2342
	MARS E.	47 34 03	2151	45 44 22	2163	43 54 59	2174	42 05 53	2186
	Spica E.	53 28 48	2124	51 38 25	2135	49 48 19	2146	47 58 30	2158
	Antares E.	99 05 14	2167	97 15 56	2176	95 26 53	2187	93 38 06	2198
13	Aldebaran W.	94 49 14	2219	96 37 13	2234	98 24 50	2249	100 12 05	2265
	Pollux W.	52 27 05	2363	54 11 33	2372	55 55 48	2380	57 39 51	2391
	MARS E.	33 05 23	2261	31 18 26	2277	29 31 53	2296	27 45 47	2314
	Spica E.	38 54 21	2229	37 06 36	2245	35 19 15	2261	33 32 18	2277
	Antares E.	84 38 51	2266	82 52 02	2282	81 05 36	2298	79 19 33	2313
14	Aldebaran W.	109 02 20	2348	110 47 09	2366	112 31 32	2384	114 15 30	2401
	Pollux W.	66 15 54	2456	67 58 09	2471	69 40 03	2486	71 21 36	2502
	Regulus W.	29 20 07	2396	31 03 48	2408	32 47 11	2422	34 30 14	2437
	Antares E.	70 35 25	2403	68 51 54	2421	67 08 49	2440	65 26 11	2460
	α Aquilæ E.	119 00 08	2483	117 27 27	2483	115 54 47	2485	114 22 09	2490
15	Pollux W.	79 43 36	2587	81 22 49	2604	83 01 38	2623	84 40 02	2640
	Regulus W.	43 00 04	2517	44 40 53	2535	46 21 18	2551	48 01 20	2569
	Antares E.	57 00 04	2562	55 20 17	2584	53 41 00	2605	52 02 12	2628
	α Aquilæ E.	106 41 00	2931	105 09 21	2943	103 37 57	2955	102 06 48	2968
	SUN E.	134 09 32	2850	132 36 09	2869	131 03 10	2888	129 30 36	2908
16	Pollux W.	92 45 59	2732	94 21 57	2750	95 57 30	2768	97 32 40	2786
	Regulus W.	56 15 30	2656	57 53 09	2673	59 30 25	2690	61 07 18	2707
	Antares E.	43 55 54	2744	42 20 13	2769	40 45 04	2794	39 10 28	2820
	α Aquilæ E.	94 35 26	3044	93 06 08	3060	91 37 10	3077	90 08 32	3095
	SATURN E.	98 28 31	2695	96 51 45	2713	95 15 22	2730	93 39 22	2748
	SUN E.	121 53 51	3003	120 23 42	3022	118 53 56	3040	117 24 33	3059
17	Pollux W.	105 22 33	2876	106 55 22	2894	108 27 49	2912	109 59 53	2928
	Regulus W.	69 06 07	2790	70 40 48	2805	72 15 09	2821	73 49 10	2835
	MARS W.	21 20 25	2828	22 54 16	2838	24 27 54	2849	26 01 18	2860
	Spica W.	15 34 55	2828	17 08 46	2837	18 42 26	2846	20 15 54	2855
	Antares E.	31 26 23	2969	29 55 32	3005	28 25 26	3043	26 56 06	3082
	α Aquilæ E.	82 50 51	3187	81 24 26	3206	79 58 24	3225	78 32 45	3246
	SATURN E.	85 45 07	2833	84 11 22	2848	82 37 57	2865	81 04 53	2880
	SUN E.	110 03 14	3148	108 36 03	3165	107 09 12	3182	105 42 41	3198
18	Regulus W.	81 34 33	2905	83 06 45	2919	84 38 40	2931	86 10 20	2943
	MARS W.	33 44 48	2916	35 16 47	2926	36 48 33	2936	38 20 06	2947
	Spica W.	27 59 54	2912	29 31 58	2923	31 03 48	2934	32 35 24	2944

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.	Midnight.	P. L. of Diff.	XVh	P. L. of Diff.	XVIIIh	P. L. of Diff.	XXIh	P. L. of Diff.
		° ' "		° ' "		° ' "		° ' "	
10	Spica E.	75 49 04	2045	73 56 40	2048	72 04 20	2051	70 12 05	2055
11	α Arietis W.	105 43 05	2178	107 32 06	2188	109 20 51	2200	111 09 19	2211
	Aldebaran W.	72 48 58	2083	74 40 24	2090	76 31 38	2099	78 22 39	2109
	Pollux W.	31 32 57	2419	33 16 04	2395	34 59 46	2378	36 43 52	2364
	MARS E.	54 55 14	2115	53 04 37	2122	51 14 12	2131	49 24 00	2141
	Spica E.	60 52 49	2086	59 01 29	2094	57 10 21	2103	55 19 27	2113
	Antares E.	106 24 41	2133	104 34 32	2140	102 44 34	2147	100 54 47	2157
12	Aldebaran W.	87 33 49	2165	89 23 10	2178	91 12 11	2190	93 00 53	2204
	Pollux W.	45 27 47	2343	47 12 44	2346	48 57 37	2349	50 42 25	2355
	MARS E.	40 17 05	2200	38 28 37	2213	36 40 30	2229	34 52 45	2244
	Spica E.	46 08 59	2171	44 19 48	2185	42 30 58	2199	40 42 29	2213
	Antares E.	91 49 36	2211	90 01 25	2225	88 13 34	2237	86 26 02	2251
13	Aldebaran W.	101 58 56	2281	103 45 23	2298	105 31 26	2314	107 17 05	2331
	Pollux W.	59 23 39	2403	61 07 10	2415	62 50 23	2428	64 33 18	2441
	MARS E.	26 00 08	2336	24 15 01	2357	22 30 25	2379	20 46 20	2403
	Spica E.	31 45 45	2296	29 59 39	2313	28 13 59	2333	26 28 47	2352
	Antares E.	77 33 53	2331	75 48 38	2348	74 03 48	2366	72 19 24	2383
14	Aldebaran W.	115 59 03	2420	117 42 09	2438	119 24 50	2457	121 07 04	2475
	Pollux W.	73 02 46	2319	74 43 33	2335	76 23 57	2352	78 03 58	2369
	Regulus W.	36 12 56	2453	37 55 16	2467	39 37 15	2484	41 18 51	2500
	Antares E.	63 44 01	2480	62 02 20	2499	60 21 06	2520	58 40 21	2540
	α Aquilæ E.	112 49 37	2896	111 17 13	2903	109 44 58	2911	108 12 53	2920
15	Pollux W.	86 18 03	2658	87 55 39	2677	89 32 50	2695	91 09 37	2713
	Regulus W.	49 40 58	2587	51 20 11	2604	52 59 01	2621	54 37 27	2638
	Antares E.	50 23 55	2650	48 46 08	2673	47 08 52	2696	45 32 07	2720
	α Aquilæ E.	100 35 55	2983	99 05 21	2997	97 35 04	3011	96 05 05	3027
	SUN E.	127 58 27	2927	126 26 42	2946	124 55 21	2965	123 24 24	2984
16	Pollux W.	99 07 26	2805	100 41 48	2823	102 15 46	2841	103 49 21	2859
	Regulus W.	62 43 48	2724	64 19 56	2741	65 55 41	2757	67 31 05	2774
	Antares E.	37 36 26	2848	36 03 00	2876	34 30 10	2905	32 57 57	2935
	α Aquilæ E.	88 40 16	3113	87 12 22	3130	85 44 49	3149	84 17 39	3168
	SATURN E.	92 03 46	2766	90 28 33	2783	88 53 43	2799	87 19 14	2816
	SUN E.	115 55 33	3077	114 26 55	3096	112 58 40	3113	111 30 46	3131
17	Pollux W.	111 31 36	2946	113 02 56	2963	114 33 55	2980	116 04 33	2997
	Regulus W.	75 22 52	2851	70 56 14	2865	78 29 18	2879	80 02 04	2892
	MARS W.	27 34 28	2871	29 07 24	2882	30 40 06	2893	32 12 34	2904
	Spica W.	21 49 10	2866	23 22 12	2876	24 55 01	2888	26 27 35	2900
	Antares E.	25 27 35	3129	24 00 03	3184	22 33 37	3247	21 08 22	3318
	α Aquilæ E.	77 07 30	3266	75 42 39	3287	74 18 12	3307	72 54 09	3328
	SATURN E.	79 32 09	2895	77 59 44	2911	76 27 39	2925	74 55 52	2939
	SUN E.	104 16 30	3214	102 50 37	3230	101 25 03	3245	99 59 47	3259
18	Regulus W.	87 41 44	2955	89 12 53	2965	90 43 49	2976	92 14 32	2987
	MARS W.	39 51 25	2958	41 22 31	2967	42 53 25	2976	44 24 08	2985
	Spica W.	34 06 47	2955	35 37 56	2965	37 08 52	2976	38 39 35	2985

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Noon.	P. L. of Diff.	IIIh	P. L. of Diff.	VIh	P. L. of Diff.	IXh	P. L. of Diff.
			° ' "		° ' "		° ' "		° ' "	
18	<i>α</i> Aquilæ	E.	71 30 30	3350	70 07 16	3372	68 44 28	3394	67 22 05	3416
	SATURN	E.	73 24 22	2953	71 53 10	2966	70 22 15	2979	68 51 36	2992
	SUN	E.	98 34 48	3274	97 10 06	3288	95 45 41	3302	94 21 32	3314
19	Regulus	W.	93 45 01	2997	95 15 17	3006	96 45 22	3015	98 15 16	3024
	MARS	W.	45 54 39	2993	47 25 00	3002	48 55 10	3009	50 25 11	3018
	Spica	W.	40 10 07	2994	41 40 27	3003	43 10 36	3012	44 40 34	3019
	<i>α</i> Aquilæ	E.	60 36 47	3341	59 17 08	3357	57 57 58	3366	56 39 19	3365
	SATURN	E.	61 22 07	3049	59 52 55	3059	58 23 55	3069	56 55 07	3078
	SUN	E.	87 24 18	3372	86 01 30	3383	84 38 54	3393	83 16 29	3401
20	Regulus	W.	105 42 18	3060	107 11 17	3066	108 40 08	3071	110 08 53	3076
	MARS	W.	57 53 06	3048	59 22 19	3052	60 51 27	3056	62 20 30	3060
	Spica	W.	52 08 09	3053	53 37 16	3059	55 06 16	3063	56 35 11	3068
	SATURN	E.	49 33 52	3119	48 06 06	3127	46 38 29	3133	45 11 00	3139
	<i>α</i> Aquilæ	E.	50 14 27	3795	48 59 20	3836	47 44 55	3879	46 31 14	3925
	SUN	E.	76 26 49	3440	75 05 18	3446	73 43 54	3452	72 22 36	3456
21	MARS	W.	69 44 43	3073	71 13 25	3074	72 42 06	3075	74 10 46	3076
	Spica	W.	63 58 32	3083	65 27 02	3086	66 55 29	3087	68 23 55	3087
	Antares	W.	20 03 03	3500	21 23 27	3452	22 44 45	3411	24 06 49	3376
	SATURN	E.	37 55 26	3168	36 28 39	3174	35 01 59	3180	33 35 26	3186
	<i>α</i> Aquilæ	E.	40 35 41	4222	39 27 36	4298	38 20 42	4383	37 15 05	4477
	SUN	E.	65 37 21	3475	64 16 29	3478	62 55 40	3480	61 34 53	3480
22	MARS	W.	81 34 08	3071	83 02 53	3069	84 31 40	3067	86 00 30	3065
	Spica	W.	75 45 57	3087	77 14 23	3085	78 42 51	3083	80 11 21	3081
	Antares	W.	31 05 25	3263	32 30 20	3247	33 55 33	3233	35 21 03	3220
	SUN	E.	54 51 09	3480	53 30 23	3480	52 09 37	3478	50 48 48	3476
23	MARS	W.	93 25 38	3045	94 54 55	3041	96 24 17	3036	97 53 45	3030
	Spica	W.	87 34 41	3065	89 03 33	3060	90 32 31	3056	92 01 35	3052
	Antares	W.	42 32 04	3166	43 58 54	3157	45 25 55	3147	46 53 08	3137
	SUN	E.	44 04 03	3462	42 42 56	3457	41 21 44	3453	40 00 27	3449
24	MARS	W.	105 22 50	3001	106 53 02	2994	108 23 22	2987	109 53 51	2980
	Spica	W.	99 28 25	3024	100 58 08	3018	102 27 59	3011	103 57 58	3005
	Antares	W.	54 11 58	3092	55 40 17	3084	57 08 46	3075	58 37 26	3066
	SUN	E.	33 12 48	3424	31 50 59	3420	30 29 05	3415	29 07 06	3410

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.	P. L. of Diff.	XV ^h	P. L. of Diff.	XVIII ^h	P. L. of Diff.	XXI ^h	P. L. of Diff.
			° ' "		° ' "		° ' "		° ' "	
18	<i>α</i> Aquilæ	E.	66 00 07	3440	64 38 36	3464	63 17 32	3489	61 56 56	3514
	SATURN	E.	67 21 13	3004	65 51 05	3016	64 21 12	3027	62 51 33	3038
	SUN	E.	92 57 37	3327	91 33 57	3339	90 10 31	3351	88 47 18	3362
19	Regulus	W.	99 44 59	3032	101 14 32	3039	102 43 56	3047	104 13 11	3053
	MARS	W.	51 55 02	3024	53 24 45	3031	54 54 19	3037	56 23 46	3043
	Spica	W.	46 10 23	3027	47 40 02	3034	49 09 32	3041	50 38 54	3047
	<i>α</i> Aquilæ	E.	55 21 12	3656	54 03 38	3688	52 46 38	3722	51 30 14	3757
	SATURN	E.	55 26 31	3087	53 58 06	3096	52 29 52	3104	51 01 47	3112
	SUN	E.	81 54 14	3410	80 32 09	3419	79 10 14	3426	77 48 27	3434
20	Regulus	W.	111 37 32	3080	113 06 06	3085	114 34 34	3088	116 02 58	3091
	MARS	W.	63 49 28	3065	65 18 21	3067	66 47 11	3069	68 15 58	3071
	Spica	W.	58 04 00	3072	59 32 44	3076	61 01 23	3078	62 29 59	3081
	SATURN	E.	43 43 38	3146	42 16 24	3153	40 49 18	3158	39 22 19	3163
	<i>α</i> Aquilæ	E.	45 18 20	3975	44 06 16	4030	42 55 06	4089	41 44 53	4152
	SUN	E.	71 01 13	3462	69 40 16	3466	68 19 14	3470	66 58 16	3472
21	MARS	W.	75 39 25	3076	77 08 04	3075	78 36 44	3074	80 05 25	3073
	Spica	W.	69 52 20	3088	71 20 44	3088	72 49 08	3088	74 17 32	3087
	Antares	W.	25 29 33	3346	26 52 51	3322	28 16 37	3300	29 40 49	3279
	SATURN	E.	32 09 00	3193	30 42 42	3198	29 16 31	3206	27 50 29	3213
	<i>α</i> Aquilæ	E.	36 10 53	4581	35 08 12	4698	34 07 11	4828	33 07 58	4977
	SUN	E.	60 14 07	3481	58 53 22	3482	57 32 38	3482	56 11 54	3481
22	MARS	W.	87 29 23	3061	88 58 20	3058	90 27 21	3054	91 56 27	3050
	Spica	W.	81 39 54	3078	83 08 30	3076	84 37 09	3072	86 05 53	3069
	Antares	W.	36 46 48	3209	38 12 47	3197	39 39 00	3186	41 05 26	3176
	SUN	E.	49 27 57	3473	48 07 03	3471	46 46 07	3468	45 25 07	3464
23	MARS	W.	99 23 20	3026	100 53 01	3019	102 22 50	3014	103 52 46	3007
	Spica	W.	93 30 44	3047	94 59 59	3041	96 29 21	3036	97 58 49	3030
	Antares	W.	48 20 33	3129	49 48 08	3120	51 15 53	3110	52 43 50	3101
	SUN	E.	38 39 06	3444	37 17 39	3440	35 56 08	3435	34 34 31	3430
24	MARS	W.	111 24 29	2973	112 55 16	2965	114 26 12	2958	115 57 18	2950
	Spica	W.	105 28 05	2998	106 58 20	2991	108 28 44	2983	109 59 18	2976
	Antares	W.	60 06 17	3057	61 35 19	3049	63 04 31	3039	64 33 55	3031
	SUN	E.	27 45 01	3406	26 22 51	3401	25 00 36	3397	23 38 16	3393

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S					Sideral Time of Semi-diameter Passing Meridian.	Equation of Time, to be Added to Apparent Time.	Diff. for 1 Hour.
		Apparent Right Ascension.	Diff. for 1 Hour.	Apparent Declination.	Diff. for 1 Hour.	Semi-diameter.			
		h m s	s	° ' "	"	' "	s	m s	s
SUN.	1	22 45 11.82	+ 9.386	S. 7 55 03.8	+ 56.75	16 10.18	65.47	12 42.07	0.469
Mon.	2	22 48 56.82	9.364	7 32 18.7	57.02	16 09.94	65.40	12 30.55	0.491
Tues.	3	22 52 41.30	9.343	7 09 27.2	57.27	16 09.71	65.33	12 18.51	0.512
Wed.	4	22 56 25.28	+ 9.323	6 46 29.6	+ 57.51	16 09.47	65.26	12 05.96	0.532
Thur.	5	23 00 08.77	9.303	6 23 26.4	57.74	16 09.22	65.19	11 52.93	0.552
Frid.	6	23 03 51.78	9.283	6 00 18.1	57.95	16 08.98	65.12	11 39.44	0.572
Sat.	7	23 07 34.34	+ 9.265	5 37 04.9	+ 58.14	16 08.73	65.06	11 25.49	0.590
SUN.	8	23 11 16.47	9.247	5 13 47.3	58.32	16 08.48	65.00	11 11.11	0.608
Mon.	9	23 14 58.19	9.231	4 50 25.7	58.48	16 08.23	64.95	10 56.31	0.624
Tues.	10	23 18 39.52	+ 9.215	4 27 00.4	+ 58.63	16 07.97	64.89	10 41.13	0.640
Wed.	11	23 22 20.48	9.200	4 03 31.8	58.76	16 07.72	64.84	10 25.58	0.655
Thur.	12	23 26 01.09	9.186	3 40 00.2	58.87	16 07.46	64.79	10 09.69	0.669
Frid.	13	23 29 41.39	+ 9.173	3 16 26.0	+ 58.97	16 07.20	64.75	9 53.47	0.682
Sat.	14	23 33 21.39	9.162	2 52 49.6	59.06	16 06.94	64.71	9 36.96	0.693
SUN.	15	23 37 01.12	9.151	2 29 11.2	59.13	16 06.68	64.67	9 20.19	0.704
Mon.	16	23 40 40.61	+ 9.141	2 05 31.4	+ 59.19	16 06.40	64.63	9 03.17	0.714
Tues.	17	23 44 19.87	9.133	1 41 50.3	59.23	16 06.13	64.60	8 45.92	0.722
Wed.	18	23 47 58.94	9.125	1 18 08.4	59.27	16 05.86	64.57	8 28.50	0.730
Thur.	19	23 51 37.82	+ 9.117	0 54 26.1	+ 59.27	16 05.58	64.54	8 10.88	0.737
Frid.	20	23 55 16.56	9.111	0 30 43.6	59.27	16 05.30	64.52	7 53.10	0.743
Sat.	21	23 58 55.16	9.106	S. 0 07 01.4	59.25	16 05.03	64.50	7 35.20	0.748
SUN.	22	0 02 33.65	+ 9.102	N. 0 16 40.1	+ 59.22	16 04.75	64.48	7 17.19	0.752
Mon.	23	0 06 12.04	9.098	0 40 20.7	59.17	16 04.47	64.47	6 59.09	0.756
Tues.	24	0 09 50.36	9.095	1 04 00.0	59.11	16 04.19	64.46	6 40.91	0.759
Wed.	25	0 13 28.63	+ 9.093	1 27 37.5	+ 59.03	16 03.91	64.45	6 22.66	0.761
Thur.	26	0 17 06.85	9.092	1 51 12.9	58.93	16 03.63	64.44	6 04.38	0.762
Frid.	27	0 20 45.06	9.092	2 14 45.9	58.82	16 03.35	64.44	5 46.10	0.762
Sat.	28	0 24 23.27	+ 9.092	2 38 16.0	+ 58.69	16 03.07	64.44	5 27.80	0.762
SUN.	29	0 28 01.49	9.092	3 01 43.0	58.56	16 02.79	64.44	5 09.52	0.762
Mon.	30	0 31 39.74	9.094	3 25 06.4	58.40	16 02.52	64.45	4 51.27	0.760
Tues.	31	0 35 18.04	9.097	3 48 25.9	58.23	16 02.24	64.46	4 33.06	0.757
Wed.	32	0 38 56.39	+ 9.100	N. 4 11 41.1	+ 58.04	16 01.98	64.47	4 14.92	0.754

NOTE.—The mean time of semidiameter passing meridian may be found by subtracting 0.18° from the sideral time. The sign + prefixed to the hourly change of declination indicates that south declinations are decreasing, or north declinations, increasing.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S				Equation of Time, to be Subtracted from Mean Time.	Diff. for 1 Hour.	Sidereal Time, or Right Ascension of Mean Sun.
		Apparent Right Ascension.	Diff. for 1 Hour.	Apparent Declination.	Diff. for 1 Hour.			
		h m s	s	° ' "	"	m s	s	h m s
SUN.	1	22 45 09.84	+9.387	S. 7 55 15.9	+56.75	12 42.17	+0.469	22 32 27.67
Mon.	2	22 48 54.87	9.365	7 32 30.6	57.02	12 30.65	0.491	22 36 24.22
Tues.	3	22 52 39.38	9.344	7 09 38.9	57.28	12 18.61	0.512	22 40 20.77
Wed.	4	22 56 23.40	+9.324	6 46 41.2	+57.52	12 06.07	+0.532	22 44 17.33
Thur.	5	23 00 06.92	9.304	6 23 37.9	57.75	11 53.04	0.552	22 48 13.88
Frid.	6	23 03 49.98	9.284	6 00 29.3	57.96	11 39.55	0.572	22 52 10.43
Sat.	7	23 07 32.58	+9.266	5 37 16.0	+58.15	11 25.60	+0.590	22 56 06.98
SUN.	8	23 11 14.75	9.248	5 13 58.2	58.33	11 11.22	0.608	23 00 03.53
Mon.	9	23 14 56.51	9.232	4 50 36.4	58.49	10 56.42	0.624	23 04 00.09
Tues.	10	23 18 37.88	+9.216	4 27 10.8	+58.64	10 41.24	+0.640	23 07 56.64
Wed.	11	23 22 18.88	9.201	4 03 42.0	58.77	10 25.69	0.655	23 11 53.19
Thur.	12	23 25 59.54	9.187	3 40 10.2	58.88	10 09.80	0.669	23 15 49.74
Frid.	13	23 29 39.87	+9.174	3 16 35.7	+58.98	9 53.58	+0.682	23 19 46.29
Sat.	14	23 33 19.92	9.163	2 52 59.0	59.07	9 37.07	0.693	23 23 42.85
SUN.	15	23 36 59.70	9.152	2 29 20.4	59.14	9 20.30	0.704	23 27 39.40
Mon.	16	23 40 39.23	+9.142	2 05 40.3	+59.20	9 03.28	+0.714	23 31 35.95
Tues.	17	23 44 18.53	9.134	1 41 59.0	59.24	8 46.03	0.722	23 35 32.50
Wed.	18	23 47 57.65	9.126	1 18 16.8	59.28	8 28.60	0.730	23 39 29.05
Thur.	19	23 51 36.58	+9.119	0 54 34.2	+59.28	8 10.98	+0.737	23 43 25.60
Frid.	20	23 55 15.36	9.113	0 30 51.4	59.28	7 53.20	0.743	23 47 22.16
Sat.	21	23 58 54.01	9.108	S. 0 07 08.9	59.26	7 35.30	0.748	23 51 18.71
SUN.	22	0 02 32.54	+9.104	N. 0 16 32.9	+59.23	7 17.28	+0.752	23 55 15.26
Mon.	23	0 06 10.98	9.100	0 40 13.8	59.18	6 59.17	0.756	23 59 11.81
Tues.	24	0 09 49.35	9.097	1 03 53.4	59.12	6 40.99	0.759	0 03 08.36
Wed.	25	0 13 27.66	+9.095	1 27 31.2	+59.04	6 22.74	+0.761	0 07 04.92
Thur.	26	0 17 05.93	9.094	1 51 07.0	58.94	6 04.46	0.762	0 11 01.47
Frid.	27	0 20 44.19	9.094	2 14 40.2	58.83	5 46.17	0.762	0 14 58.02
Sat.	28	0 24 22.44	+9.094	2 38 10.7	+58.70	5 27.87	+0.762	0 18 54.57
SUN.	29	0 28 00.71	9.094	3 01 38.0	58.57	5 09.59	0.762	0 22 51.12
Mon.	30	0 31 39.00	9.096	3 25 01.7	58.41	4 51.33	0.760	0 26 47.67
Tues.	31	0 35 17.35	9.099	3 48 21.5	58.24	4 33.12	0.757	0 30 44.23
Wed.	32	0 38 55.75	+9.102	N. 4 11 37.0	+58.05	4 14.97	+0.754	0 34 40.78

NOTE.—The semidiameter for mean noon may be assumed the same as that for apparent noon.
 The sign + prefixed to the hourly change of declination indicates that south declinations are decreasing or north declinations increasing.

Diff. for 1 Hour,
 +9.8565".
 (Table III.)

AT GREENWICH MEAN NOON.								
Day of the Month.	Day of the Year.	THE SUN'S				Logarithm of the Radius Vector of the Earth.	Diff. for 1 Hour.	Mean Time of Sidereal Noon.
		TRUE LONGITUDE.		Diff. for 1 Hour.	LATITUDE.			
		λ	λ'					
		$^{\circ}$ $'$ $''$	$'$ $''$	$''$	$''$			h m s
1	60	339 44 39.8	44 25.4	+150.57	— 0.16	9.996 0900	+ 44.3	1 27 17.99
2	61	340 44 52.6	44 38.0	150.49	0.29	9.996 1966	44.5	1 23 22.08
3	62	341 45 03.3	44 48.6	150.41	0.41	9.996 3037	44.8	1 19 26.18
4	63	342 45 12.0	44 57.2	+150.32	— 0.53	9.996 4115	+ 45.1	1 15 30.27
5	64	343 45 18.6	45 03.7	150.23	0.64	9.996 5201	45.4	1 11 34.36
6	65	344 45 23.0	45 08.0	150.14	0.73	9.996 6294	45.7	1 07 38.46
7	66	345 45 25.2	45 10.2	+150.05	— 0.78	9.996 7397	+ 46.2	1 03 42.55
8	67	346 45 25.2	45 10.1	149.96	0.81	9.996 8510	46.6	0 59 46.65
9	68	347 45 23.1	45 07.9	149.87	0.80	9.996 9635	47.1	0 55 50.74
10	69	348 45 18.8	45 03.5	+149.78	— 0.75	9.997 0772	+ 47.6	0 51 54.83
11	70	349 45 12.3	44 57.0	149.69	0.69	9.997 1922	48.2	0 47 58.93
12	71	350 45 03.8	44 48.3	149.60	0.60	9.997 3086	48.8	0 44 03.02
13	72	351 44 53.2	44 37.7	+149.52	— 0.47	9.997 4264	+ 49.4	0 40 07.12
14	73	352 44 40.6	44 25.0	149.44	0.33	9.997 5456	49.9	0 36 11.21
15	74	353 44 26.2	44 10.5	149.36	0.18	9.997 6660	50.4	0 32 15.30
16	75	354 44 09.9	43 54.2	+149.28	— 0.05	9.997 7876	+ 50.9	0 28 19.40
17	76	355 43 51.8	43 36.0	149.21	+ 0.07	9.997 9103	51.3	0 24 23.49
18	77	356 43 32.0	43 16.0	149.14	0.19	9.998 0340	51.7	0 20 27.58
19	78	357 43 10.3	42 54.3	+149.06	+ 0.28	9.998 1584	+ 52.0	0 16 31.68
20	79	358 42 46.9	42 30.8	148.99	0.36	9.998 2834	52.2	0 12 35.78
21	80	359 42 21.8	42 05.6	148.92	0.40	9.998 4090	52.4	0 08 39.87
22	81	0 41 54.8	41 38.6	+148.84	+ 0.42	9.998 5349	+ 52.5	0 04 43.96
23	82	1 41 26.2	41 09.9	148.77	0.40	9.998 6511	52.6	0 00 48.06
24	83	2 40 55.7	40 39.3	148.69	0.36	9.998 7873	52.6	23 56 52.15
25	84	3 40 23.4	40 06.9	+148.62	+ 0.30	9.998 9135	+ 52.6	23 49 00.34
26	85	4 39 49.2	39 32.6	148.54	0.22	9.999 0396	52.5	23 45 04.43
27	86	5 39 13.1	38 56.5	148.46	+ 0.12	9.999 1654	52.3	23 41 08.52
28	87	6 38 35.0	38 18.3	+148.37	— 0.01	9.999 2908	+ 52.2	23 37 12.62
29	88	7 37 55.0	37 38.2	148.29	0.13	9.999 4158	52.0	23 33 16.71
30	89	8 37 12.9	36 56.0	148.20	0.25	9.999 5402	51.8	23 29 20.81
31	90	9 36 28.6	36 11.7	148.11	0.38	9.999 6642	51.5	23 25 24.90
32	91	10 35 42.2	35 25.1	+148.02	— 0.50	9.999 7876	+ 51.3	23 21 28.99

NOTE.—The longitudes in the column λ are referred to the true equinox of their own date, while those in the column λ' are referred to the mean equinox of the beginning of the *Besselian* fictitious year.

Diff. for 1 Hour,
—9.8296".
(Table II.)

NOTE.—The longitudes in the column λ are referred to the true equinox of their own date, while those in the column λ' are referred to the mean equinox of the beginning of the Besselian fictitious year.

Diff. for 1 Hour,
—9.8296".
(Table II.)

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month.	THE MOON'S								
	SEMIDIAMETER.		HORIZONTAL PARALLAX.				UPPER TRANSIT.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 Hour.	Midnight.	Diff. for 1 Hour.	Meridian of Greenwich.	Diff. for 1 Hour.	Noon.
	"	"	"	"	"	"	h m	m	d
1	15 23.4	15 27.4	56 22.9	+ 1.23	56 37.7	+ 1.23	1 43.2	+ 1.95	2.1
2	15 31.4	15 35.5	56 52.5	1.24	57 07.4	1.24	2 30.6	2.01	3.1
3	15 39.6	15 43.6	57 22.3	1.24	57 37.3	1.24	3 19.8	2.09	4.1
4	15 47.7	15 51.7	57 52.1	+ 1.23	58 06.9	+ 1.23	4 11.1	+ 2.19	5.1
5	15 55.7	15 59.6	58 21.5	1.20	58 35.9	1.18	5 05.0	2.29	6.1
6	16 03.4	16 07.0	58 49.8	1.14	59 03.2	1.08	6 01.0	2.38	7.1
7	16 10.5	16 13.6	59 15.7	+ 1.00	59 27.2	+ 0.90	6 58.8	+ 2.43	8.1
8	16 16.3	16 18.6	59 37.3	0.77	59 45.7	0.62	7 57.2	2.43	9.1
9	16 20.4	16 21.5	59 52.2	0.44	59 56.3	+ 0.23	8 55.2	2.39	10.1
10	16 21.9	16 21.6	59 57.9	+ 0.01	59 56.6	- 0.23	9 52.0	+ 2.33	11.1
11	16 20.4	16 18.4	59 52.4	- 0.48	59 45.1	0.73	10 47.0	2.25	12.1
12	16 15.6	16 12.0	59 34.7	0.98	59 21.5	1.21	11 40.2	2.18	13.1
13	16 07.7	16 02.7	59 05.5	- 1.43	58 47.2	- 1.61	12 31.9	+ 2.13	14.1
14	15 57.1	15 51.2	58 26.9	1.76	58 05.0	1.87	13 22.4	2.09	15.1
15	15 44.9	15 38.5	57 42.0	1.94	57 18.4	1.97	14 12.2	2.06	16.1
16	15 32.1	15 25.7	56 54.8	- 1.96	56 31.5	- 1.90	15 01.5	+ 2.04	17.1
17	15 19.6	15 13.8	56 09.0	1.82	55 47.7	1.71	15 50.4	2.03	18.1
18	15 08.4	15 03.5	55 28.0	1.56	55 10.1	1.40	16 39.1	2.02	19.1
19	14 59.2	14 55.6	54 54.3	- 1.22	54 40.9	- 1.02	17 27.4	+ 2.00	20.1
20	14 52.6	14 50.3	54 29.9	0.81	54 21.4	0.59	18 15.2	1.98	21.1
21	14 48.7	14 47.8	54 15.6	- 0.38	54 12.4	- 0.15	19 02.4	1.95	22.1
22	14 47.6	14 48.2	54 11.9	+ 0.06	54 13.8	+ 0.27	19 49.0	+ 1.92	23.1
23	14 49.4	14 51.3	54 18.3	0.47	54 25.1	0.65	20 34.9	1.90	24.1
24	14 53.7	14 56.7	54 34.0	0.83	54 45.0	0.98	21 20.3	1.89	25.1
25	15 00.1	15 04.0	54 57.7	+ 1.12	55 11.9	+ 1.24	22 05.6	+ 1.89	26.1
26	15 08.2	15 12.7	55 27.4	1.33	55 43.9	1.40	22 51.2	1.91	27.1
27	15 17.4	15 22.2	56 01.1	1.45	56 18.7	1.47	23 37.6	1.96	28.1
28	15 27.0	15 31.8	56 36.3	+ 1.46	56 53.8	+ 1.44	0		29.1
29	15 36.4	15 40.9	57 10.9	1.39	57 27.3	1.33	0 25.4	+ 2.03	0.4
30	15 45.1	15 49.1	57 42.8	1.25	57 57.3	1.16	1 14.9	2.11	1.4
31	15 52.7	15 56.0	58 10.6	1.06	58 22.8	0.96	2 06.6	2.20	2.4
32	15 59.0	16 01.6	58 33.7	+ 0.85	58 43.3	+ 0.74	3 00.7	+ 2.29	3.4

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
SUNDAY 1.					TUESDAY 3.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
0	0 12 26.90	+ 2.0442	N. 2 33 40.6	+ 10.162	0	1 53 23.76	+ 2.1745	N. 10 18 44.3	+ 8.870
1	0 14 29.61	2.0461	2 43 50.1	10.155	1	1 55 34.33	2.1780	10 27 35.0	8.820
2	0 16 32.43	2.0480	2 53 59.2	10.148	2	1 57 45.12	2.1815	10 36 22.7	8.770
3	0 18 35.37	2.0500	3 04 07.8	10.140	3	1 59 56.11	2.1849	10 45 07.4	8.718
4	0 20 38.43	2.0520	3 14 16.0	10.132	4	2 02 07.31	2.1884	10 53 48.9	8.666
5	0 22 41.61	2.0541	3 24 23.6	10.122	5	2 04 18.72	2.1920	11 02 27.3	8.613
6	0 24 44.92	2.0562	3 34 30.6	10.111	6	2 06 30.35	2.1956	11 11 02.4	8.558
7	0 26 48.35	2.0583	3 44 36.9	10.100	7	2 08 42.19	2.1991	11 19 34.3	8.503
8	0 28 51.92	2.0605	3 54 42.6	10.088	8	2 10 54.24	2.2027	11 28 02.8	8.447
9	0 30 55.61	2.0627	4 04 47.5	10.075	9	2 13 06.51	2.2063	11 36 27.9	8.390
10	0 32 59.44	2.0649	4 14 51.6	10.062	10	2 15 19.00	2.2100	11 44 49.6	8.333
11	0 35 03.40	2.0672	4 24 54.9	10.047	11	2 17 31.71	2.2137	11 53 07.8	8.273
12	0 37 07.50	2.0695	4 34 57.2	10.031	12	2 19 44.64	2.2173	12 01 22.3	8.213
13	0 39 11.74	2.0718	4 44 58.6	10.014	13	2 21 57.79	2.2210	12 09 33.3	8.153
14	0 41 16.12	2.0743	4 54 58.9	9.997	14	2 24 11.16	2.2247	12 17 40.6	8.090
15	0 43 20.65	2.0767	5 04 58.2	9.979	15	2 26 24.75	2.2284	12 25 44.1	8.027
16	0 45 25.32	2.0791	5 14 56.4	9.960	16	2 28 38.57	2.2322	12 33 43.8	7.963
17	0 47 30.14	2.0816	5 24 53.4	9.940	17	2 30 52.61	2.2359	12 41 39.7	7.899
18	0 49 35.11	2.0842	5 34 49.2	9.919	18	2 33 06.88	2.2397	12 49 31.7	7.834
19	0 51 40.24	2.0867	5 44 43.7	9.898	19	2 35 21.37	2.2434	12 57 19.7	7.767
20	0 53 45.51	2.0893	5 54 36.9	9.875	20	2 37 36.09	2.2472	13 05 03.7	7.699
21	0 55 50.95	2.0919	6 04 28.7	9.851	21	2 39 51.04	2.2510	13 12 43.6	7.630
22	0 57 56.54	2.0945	6 14 19.0	9.827	22	2 42 06.21	2.2548	13 20 19.3	7.561
23	1 00 02.29	+ 2.0972	N. 6 24 07.9	+ 9.803	23	2 44 21.62	+ 2.2587	N. 13 27 50.9	+ 7.490
MONDAY 2.					WEDNESDAY 4.				
0	1 02 08.20	+ 2.0999	N. 6 33 55.3	+ 9.776	0	2 46 37.25	+ 2.2624	N. 13 35 18.1	+ 7.418
1	1 04 14.28	2.1027	6 43 41.0	9.748	1	2 48 53.11	2.2663	13 42 41.1	7.347
2	1 06 20.52	2.1054	6 53 25.1	9.721	2	2 51 09.20	2.2702	13 49 59.7	7.273
3	1 08 26.93	2.1083	7 03 07.5	9.692	3	2 53 25.53	2.2740	13 57 13.9	7.199
4	1 10 33.52	2.1112	7 12 48.1	9.661	4	2 55 42.08	2.2778	14 04 23.6	7.124
5	1 12 40.27	2.1140	7 22 26.8	9.630	5	2 57 58.86	2.2816	14 11 28.8	7.048
6	1 14 47.20	2.1169	7 32 03.7	9.599	6	3 00 15.87	2.2854	14 18 29.3	6.971
7	1 16 54.30	2.1199	7 41 38.7	9.567	7	3 02 33.11	2.2893	14 25 25.3	6.893
8	1 19 01.59	2.1229	7 51 11.7	9.533	8	3 04 50.59	2.2932	14 32 16.5	6.814
9	1 21 09.05	2.1258	8 00 42.7	9.499	9	3 07 08.29	2.2969	14 39 03.0	6.734
10	1 23 16.69	2.1289	8 10 11.6	9.463	10	3 09 26.22	2.3008	14 45 44.6	6.653
11	1 25 24.52	2.1320	8 19 38.3	9.427	11	3 11 44.38	2.3047	14 52 21.4	6.572
12	1 27 32.53	2.1351	8 29 02.8	9.389	12	3 14 02.78	2.3086	14 58 53.2	6.489
13	1 29 40.73	2.1383	8 38 25.0	9.352	13	3 16 21.41	2.3123	15 05 20.1	6.406
14	1 31 49.12	2.1414	8 47 45.0	9.313	14	3 18 40.26	2.3161	15 11 41.9	6.322
15	1 33 57.70	2.1446	8 57 02.5	9.272	15	3 20 59.34	2.3199	15 17 58.7	6.237
16	1 36 06.47	2.1478	9 06 17.6	9.232	16	3 23 18.65	2.3238	15 24 10.3	6.150
17	1 38 15.43	2.1510	9 15 30.3	9.190	17	3 25 38.19	2.3275	15 30 16.7	6.063
18	1 40 24.59	2.1543	9 24 40.4	9.147	18	3 27 57.95	2.3313	15 36 17.8	5.975
19	1 42 33.95	2.1577	9 33 47.9	9.103	19	3 30 17.94	2.3351	15 42 13.7	5.887
20	1 44 43.51	2.1610	9 42 52.7	9.058	20	3 32 38.16	2.3388	15 48 04.2	5.797
21	1 46 53.27	2.1643	9 51 54.8	9.012	21	3 34 58.60	2.3425	15 53 49.3	5.706
22	1 49 03.23	2.1677	10 00 54.1	8.965	22	3 37 19.26	2.3463	15 59 28.9	5.614
23	1 51 13.39	2.1711	10 09 50.6	8.918	23	3 39 40.15	2.3499	16 05 03.0	5.522
24	1 53 23.76	+ 2.1745	N. 10 18 44.3	+ 8.870	24	3 42 01.25	+ 2.3536	N. 16 10 31.5	+ 5.428

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
THURSDAY 5.					SATURDAY 7.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
0	3 42 01.25	+ 2.3536	N. 16 10 31.5	+ 5.428	0	5 38 38.32	+ 2.4880	N. 18 29 45.9	+ 0.143
1	3 44 22.58	2.3573	16 15 54.4	5.335	1	5 41 07.65	2.4896	18 29 50.8	+ 0.021
2	3 46 44.13	2.3610	16 21 11.7	5.241	2	5 43 37.07	2.4910	18 29 48.4	- 0.101
3	3 49 05.90	2.3647	16 26 23.3	5.145	3	5 46 06.57	2.4923	18 29 38.7	0.223
4	3 51 27.89	2.3683	16 31 29.1	5.048	4	5 48 36.15	2.4936	18 29 21.7	0.345
5	3 53 50.09	2.3718	16 36 29.1	4.951	5	5 51 05.80	2.4948	18 28 57.3	0.468
6	3 56 12.51	2.3753	16 41 23.2	4.853	6	5 53 35.53	2.4961	18 28 25.5	0.591
7	3 58 35.13	2.3788	16 46 11.4	4.754	7	5 56 05.33	2.4972	18 27 46.4	0.713
8	4 00 57.97	2.3824	16 50 53.7	4.654	8	5 58 35.19	2.4982	18 26 59.9	0.837
9	4 03 21.02	2.3859	16 55 29.9	4.553	9	6 01 05.11	2.4992	18 26 06.0	0.960
10	4 05 44.28	2.3893	17 00 00.1	4.452	10	6 03 35.09	2.5001	18 25 04.7	1.083
11	4 08 07.74	2.3927	17 04 24.2	4.350	11	6 06 05.12	2.5009	18 23 56.0	1.207
12	4 10 31.40	2.3961	17 08 42.1	4.247	12	6 08 35.20	2.5017	18 22 39.9	1.330
13	4 12 55.27	2.3995	17 12 53.8	4.143	13	6 11 05.32	2.5023	18 21 16.4	1.453
14	4 15 19.34	2.4028	17 16 59.3	4.040	14	6 13 35.48	2.5030	18 19 45.6	1.576
15	4 17 43.61	2.4061	17 20 58.6	3.935	15	6 16 05.68	2.5035	18 18 07.3	1.699
16	4 20 08.07	2.4093	17 24 51.5	3.828	16	6 18 35.90	2.5039	18 16 21.7	1.822
17	4 22 32.73	2.4126	17 28 38.0	3.723	17	6 21 06.15	2.5044	18 14 28.7	1.945
18	4 24 57.58	2.4158	17 32 18.2	3.616	18	6 23 36.43	2.5048	18 12 28.3	2.068
19	4 27 22.62	2.4189	17 35 51.9	3.508	19	6 26 06.72	2.5050	18 10 20.5	2.191
20	4 29 47.85	2.4220	17 39 19.1	3.399	20	6 28 37.03	2.5052	18 08 05.4	2.313
21	4 32 13.26	2.4251	17 42 39.8	3.290	21	6 31 07.35	2.5054	18 05 42.9	2.437
22	4 34 38.86	2.4281	17 45 53.9	3.180	22	6 33 37.68	2.5055	18 03 13.0	2.559
23	4 37 04.63	+ 2.4309	N. 17 49 01.4	+ 3.070	23	6 36 08.01	+ 2.5054	N. 18 00 35.8	- 2.681
FRIDAY 6.					SUNDAY 8.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
0	4 39 30.57	+ 2.4338	N. 17 52 02.3	+ 2.959	0	6 38 38.33	+ 2.5053	N. 17 57 51.3	- 2.803
1	4 41 56.69	2.4368	17 54 56.5	2.847	1	6 41 08.65	2.5052	17 54 59.5	2.924
2	4 44 22.99	2.4397	17 57 43.9	2.734	2	6 43 38.96	2.5050	17 52 00.4	3.046
3	4 46 49.45	2.4424	18 00 24.6	2.622	3	6 46 09.25	2.5048	17 48 54.0	3.168
4	4 49 16.08	2.4452	18 02 58.5	2.508	4	6 48 39.53	2.5044	17 45 40.3	3.288
5	4 51 42.87	2.4478	18 05 25.6	2.394	5	6 51 09.78	2.5039	17 42 19.4	3.408
6	4 54 09.81	2.4504	18 07 45.8	2.280	6	6 53 40.00	2.5035	17 38 51.3	3.523
7	4 56 36.92	2.4530	18 09 59.2	2.166	7	6 56 10.20	2.5030	17 35 16.0	3.648
8	4 59 04.17	2.4555	18 12 05.7	2.050	8	6 58 40.36	2.5024	17 31 33.5	3.768
9	5 01 31.58	2.4580	18 14 05.2	1.933	9	7 01 10.49	2.5018	17 27 43.9	3.887
10	5 03 59.13	2.4604	18 15 57.7	1.817	10	7 03 40.57	2.5010	17 23 47.1	4.006
11	5 06 26.83	2.4628	18 17 43.2	1.700	11	7 06 10.61	2.5002	17 19 43.2	4.123
12	5 08 54.66	2.4650	18 19 21.7	1.583	12	7 08 40.59	2.4993	17 15 32.3	4.241
13	5 11 22.63	2.4673	18 20 53.1	1.465	13	7 11 10.52	2.4984	17 11 14.3	4.358
14	5 13 50.74	2.4696	18 22 17.5	1.347	14	7 13 40.40	2.4975	17 06 49.3	4.475
15	5 16 18.98	2.4717	18 23 34.7	1.228	15	7 16 10.22	2.4964	17 02 17.3	4.592
16	5 18 47.34	2.4737	18 24 44.8	1.108	16	7 18 39.97	2.4953	16 57 38.3	4.708
17	5 21 15.82	2.4757	18 25 47.7	0.989	17	7 21 09.65	2.4942	16 52 52.4	4.823
18	5 23 44.42	2.4777	18 26 43.5	0.869	18	7 23 39.27	2.4930	16 47 59.6	4.937
19	5 26 13.14	2.4796	18 27 32.0	0.748	19	7 26 08.81	2.4917	16 43 00.0	5.050
20	5 28 41.97	2.4814	18 28 13.3	0.628	20	7 28 38.27	2.4903	16 37 53.6	5.163
21	5 31 10.91	2.4832	18 28 47.4	0.508	21	7 31 07.65	2.4889	16 32 40.4	5.277
22	5 33 39.95	2.4848	18 29 14.2	0.386	22	7 33 36.94	2.4875	16 27 20.4	5.389
23	5 36 09.09	2.4864	18 29 33.7	0.264	23	7 36 06.15	2.4861	16 21 53.7	5.500
24	5 38 38.32	+ 2.4880	N. 18 29 45.9	+ 0.143	24	7 38 35.27	+ 2.4845	N. 16 16 20.4	- 5.610

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
MONDAY 9.					WEDNESDAY 11.				
	h m s	s	° ' "	"		h m s	s	° ' "	"
0	7 38 35.27	+ 2.4845	N. 16 16 20.4	- 5.610	0	9 35 17.77	+ 2.3681	N. 9 56 27.4	- 9.812
1	7 41 04.29	2.4829	16 10 40.5	5.721	1	9 37 39.77	2.3653	9 46 36.9	9.872
2	7 43 33.22	2.4813	16 04 53.9	5.830	2	9 40 01.60	2.3623	9 36 42.8	9.931
3	7 46 02.04	2.4795	15 59 00.9	5.938	3	9 42 23.25	2.3595	9 26 45.2	9.988
4	7 48 30.76	2.4778	15 53 01.3	6.046	4	9 44 44.74	2.3567	9 16 44.3	10.043
5	7 50 59.38	2.4760	15 46 55.4	6.153	5	9 47 06.05	2.3538	9 06 40.1	10.098
6	7 53 27.88	2.4741	15 40 43.0	6.259	6	9 49 27.19	2.3509	8 56 32.6	10.151
7	7 55 56.27	2.4723	15 34 24.3	6.365	7	9 51 48.16	2.3482	8 46 22.0	10.202
8	7 58 24.55	2.4703	15 27 59.2	6.469	8	9 54 08.97	2.3453	8 36 08.4	10.253
9	8 00 52.71	2.4683	15 21 28.0	6.573	9	9 56 29.60	2.3424	8 25 51.7	10.303
10	8 03 20.75	2.4663	15 14 50.5	6.676	10	9 58 50.06	2.3396	8 15 32.1	10.350
11	8 05 48.67	2.4643	15 08 06.9	6.778	11	10 01 10.35	2.3368	8 05 09.7	10.396
12	8 08 16.46	2.4622	15 01 17.2	6.879	12	10 03 30.47	2.3339	7 54 44.6	10.441
13	8 10 44.13	2.4600	14 54 21.4	6.979	13	10 05 50.42	2.3311	7 44 16.8	10.486
14	8 13 11.66	2.4578	14 47 19.7	7.078	14	10 08 10.20	2.3283	7 33 46.3	10.528
15	8 15 39.06	2.4556	14 40 12.1	7.176	15	10 10 29.82	2.3256	7 23 13.4	10.569
16	8 18 06.33	2.4533	14 32 58.6	7.273	16	10 12 49.27	2.3228	7 12 38.0	10.610
17	8 20 33.46	2.4510	14 25 39.3	7.370	17	10 15 08.55	2.3200	7 02 00.2	10.648
18	8 23 00.45	2.4487	14 18 14.2	7.466	18	10 17 27.67	2.3173	6 51 20.2	10.685
19	8 25 27.30	2.4463	14 10 43.4	7.560	19	10 19 46.62	2.3145	6 40 38.0	10.722
20	8 27 54.00	2.4438	14 03 07.0	7.653	20	10 22 05.41	2.3118	6 29 53.6	10.757
21	8 30 20.56	2.4415	13 55 25.1	7.745	21	10 24 24.04	2.3091	6 19 07.2	10.790
22	8 32 46.98	2.4390	13 47 37.6	7.837	22	10 26 42.50	2.3063	6 08 18.8	10.823
23	8 35 13.24	+ 2.4364	N. 13 39 44.7	- 7.927	23	10 29 00.80	+ 2.3037	N. 5 57 28.5	- 10.854
TUESDAY 10.					THURSDAY 12.				
	h m s	s	° ' "	"		h m s	s	° ' "	"
0	8 37 39.35	+ 2.4339	N. 13 31 46.4	- 8.016	0	10 31 18.94	+ 2.3010	N. 5 46 36.4	- 10.883
1	8 40 05.31	2.4314	13 23 42.8	8.104	1	10 33 36.92	2.2983	5 35 42.6	10.911
2	8 42 31.12	2.4289	13 15 33.9	8.191	2	10 35 54.74	2.2957	5 24 47.1	10.938
3	8 44 56.78	2.4263	13 07 19.9	8.277	3	10 38 12.40	2.2931	5 13 50.1	10.963
4	8 47 22.28	2.4237	12 59 00.7	8.363	4	10 40 29.91	2.2906	5 02 51.5	10.988
5	8 49 47.62	2.4210	12 50 36.4	8.446	5	10 42 47.27	2.2880	4 51 51.5	11.011
6	8 52 12.80	2.4183	12 42 07.2	8.528	6	10 45 04.47	2.2853	4 40 50.2	11.033
7	8 54 37.82	2.4157	12 33 33.0	8.610	7	10 47 21.51	2.2828	4 29 47.6	11.053
8	8 57 02.68	2.4129	12 24 54.0	8.690	8	10 49 38.41	2.2803	4 18 43.9	11.072
9	8 59 27.37	2.4102	12 16 10.2	8.769	9	10 51 55.15	2.2778	4 07 39.0	11.090
10	9 01 51.90	2.4075	12 07 21.7	8.848	10	10 54 11.74	2.2753	3 56 33.1	11.107
11	9 04 16.27	2.4048	11 58 28.5	8.925	11	10 56 28.19	2.2729	3 45 26.2	11.123
12	9 06 40.47	2.4020	11 49 30.7	9.000	12	10 58 44.49	2.2704	3 34 18.4	11.136
13	9 09 04.51	2.3993	11 40 28.5	9.074	13	11 01 00.64	2.2680	3 23 09.9	11.148
14	9 11 28.38	2.3964	11 31 21.8	9.148	14	11 03 16.65	2.2656	3 12 00.6	11.160
15	9 13 52.08	2.3936	11 22 10.7	9.220	15	11 05 32.51	2.2633	3 00 50.7	11.170
16	9 16 15.61	2.3908	11 12 55.4	9.290	16	11 07 48.24	2.2609	2 49 40.2	11.179
17	9 18 38.98	2.3881	11 03 35.9	9.360	17	11 10 03.82	2.2585	2 38 29.2	11.187
18	9 21 02.18	2.3852	10 54 12.2	9.428	18	11 12 19.26	2.2563	2 27 17.8	11.193
19	9 23 25.20	2.3823	10 44 44.5	9.496	19	11 14 34.57	2.2540	2 16 06.0	11.198
20	9 25 48.06	2.3795	10 35 12.7	9.562	20	11 16 49.74	2.2518	2 04 54.0	11.202
21	9 28 10.74	2.3766	10 25 37.1	9.626	21	11 19 04.78	2.2495	1 53 41.8	11.205
22	9 30 33.25	2.3738	10 15 57.6	9.690	22	11 21 19.68	2.2473	1 42 29.4	11.207
23	9 32 55.60	2.3710	10 06 14.3	9.752	23	11 23 34.45	2.2451	1 31 17.0	11.207
24	9 35 17.77	+ 2.3681	N. 9 56 27.4	- 9.812	24	11 25 49.09	+ 2.2429	N. 1 20 04.6	- 11.206

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
FRIDAY 13.					SUNDAY 15.				
	h m s	s	° ' "	"		h m s	s	° ' "	"
0	11 25 49.09	+ 2.2429	N. 1 20 04.6	-11.206	0	13 11 28.30	+ 2.1688	S. 7 15 20.4	-9.878
1	11 28 03.60	2.2408	1 08 52.3	11.203	1	13 13 38.40	2.1678	7 25 11.5	9.827
2	11 30 17.98	2.2387	0 57 40.2	11.200	2	13 15 48.44	2.1668	7 34 59.6	9.776
3	11 32 32.24	2.2367	0 46 28.3	11.196	3	13 17 58.42	2.1659	7 44 44.6	9.723
4	11 34 46.38	2.2346	0 35 16.7	11.190	4	13 20 08.35	2.1651	7 54 26.4	9.670
5	11 37 00.39	2.2325	0 24 05.5	11.183	5	13 22 18.23	2.1642	8 04 05.0	9.616
6	11 39 14.28	2.2305	0 12 54.8	11.174	6	13 24 28.05	2.1633	8 13 40.3	9.561
7	11 41 28.05	2.2285	N. 0 01 44.6	11.166	7	13 26 37.82	2.1624	8 23 12.3	9.506
8	11 43 41.70	2.2265	S. 0 09 25.1	11.156	8	13 28 47.54	2.1615	8 32 41.0	9.450
9	11 45 55.23	2.2246	0 20 34.1	11.143	9	13 30 57.20	2.1607	8 42 06.3	9.393
10	11 48 08.65	2.2227	0 31 42.3	11.130	10	13 33 06.82	2.1599	8 51 28.1	9.335
11	11 50 21.95	2.2208	0 42 49.7	11.117	11	13 35 16.39	2.1592	9 00 46.5	9.277
12	11 52 35.15	2.2190	0 53 56.3	11.102	12	13 37 25.92	2.1584	9 10 01.3	9.218
13	11 54 48.23	2.2171	1 05 01.9	11.085	13	13 39 35.40	2.1577	9 19 12.6	9.158
14	11 57 01.20	2.2153	1 16 06.5	11.068	14	13 41 44.84	2.1569	9 28 20.3	9.098
15	11 59 14.07	2.2136	1 27 10.1	11.050	15	13 43 54.23	2.1562	9 37 24.3	9.036
16	12 01 26.83	2.2118	1 38 12.5	11.030	16	13 46 03.58	2.1555	9 46 24.6	8.974
17	12 03 39.49	2.2101	1 49 13.7	11.010	17	13 48 12.89	2.1548	9 55 21.2	8.913
18	12 05 52.04	2.2083	2 00 13.7	10.988	18	13 50 22.16	2.1541	10 04 14.1	8.850
19	12 08 04.49	2.2067	2 11 12.3	10.965	19	13 52 31.38	2.1533	10 13 03.2	8.786
20	12 10 16.84	2.2051	2 22 09.5	10.942	20	13 54 40.56	2.1528	10 21 48.4	8.722
21	12 12 29.10	2.2035	2 33 05.3	10.918	21	13 56 49.71	2.1522	10 30 29.8	8.658
22	12 14 41.26	2.2018	2 43 59.6	10.891	22	13 58 58.82	2.1514	10 39 07.3	8.592
23	12 16 53.32	+ 2.2003	S. 2 54 52.2	-10.863	23	14 01 07.88	+ 2.1508	S. 10 47 40.8	-8.525
SATURDAY 14.					MONDAY 16.				
	h m s	s	° ' "	"		h m s	s	° ' "	"
0	12 19 05.29	+ 2.1988	S. 3 05 43.2	-10.836	0	14 03 16.91	+ 2.1503	S. 10 56 10.3	-8.458
1	12 21 17.17	2.1972	3 16 32.5	10.807	1	14 05 25.91	2.1497	11 04 35.8	8.391
2	12 23 28.95	2.1957	3 27 20.0	10.777	2	14 07 34.87	2.1491	11 12 57.2	8.323
3	12 25 40.65	2.1943	3 38 05.7	10.746	3	14 09 43.80	2.1486	11 21 14.6	8.256
4	12 27 52.26	2.1928	3 48 49.5	10.713	4	14 11 52.70	2.1480	11 29 27.9	8.187
5	12 30 03.79	2.1914	3 59 31.3	10.680	5	14 14 01.56	2.1474	11 37 37.0	8.118
6	12 32 15.23	2.1900	4 10 11.1	10.647	6	14 16 10.39	2.1469	11 45 42.0	8.048
7	12 34 26.59	2.1886	4 20 48.9	10.612	7	14 18 19.19	2.1463	11 53 42.7	7.977
8	12 36 37.86	2.1873	4 31 24.5	10.576	8	14 20 27.95	2.1458	12 01 39.2	7.906
9	12 38 49.06	2.1859	4 41 58.0	10.539	9	14 22 36.68	2.1453	12 09 31.4	7.834
10	12 41 00.17	2.1846	4 52 29.2	10.501	10	14 24 45.39	2.1448	12 17 19.3	7.763
11	12 43 11.21	2.1833	5 02 58.1	10.463	11	14 26 54.06	2.1443	12 25 02.9	7.690
12	12 45 22.17	2.1821	5 13 24.7	10.423	12	14 29 02.71	2.1439	12 32 42.1	7.618
13	12 47 33.06	2.1809	5 23 48.8	10.382	13	14 31 11.33	2.1434	12 40 17.0	7.544
14	12 49 43.88	2.1797	5 34 10.5	10.341	14	14 33 19.92	2.1429	12 47 47.4	7.470
15	12 51 54.62	2.1784	5 44 29.7	10.298	15	14 35 28.48	2.1425	12 55 13.4	7.396
16	12 54 05.29	2.1773	5 54 46.3	10.255	16	14 37 37.02	2.1421	13 02 34.9	7.321
17	12 56 15.90	2.1763	6 05 00.3	10.211	17	14 39 45.53	2.1416	13 09 51.9	7.246
18	12 58 26.44	2.1751	6 15 11.6	10.166	18	14 41 54.01	2.1411	13 17 04.4	7.170
19	13 00 36.91	2.1739	6 25 20.2	10.120	19	14 44 02.46	2.1406	13 24 12.3	7.094
20	13 02 47.31	2.1728	6 35 26.0	10.073	20	14 46 10.88	2.1402	13 31 15.7	7.018
21	13 04 57.65	2.1718	6 45 29.0	10.026	21	14 48 19.28	2.1398	13 38 14.5	6.942
22	13 07 07.93	2.1708	6 55 29.1	9.977	22	14 50 27.65	2.1393	13 45 08.7	6.864
23	13 09 18.15	2.1698	7 05 26.2	9.928	23	14 52 36.00	2.1389	13 51 58.2	6.787
24	13 11 28.30	+ 2.1688	S. 7 15 20.4	-9.878	24	14 54 44.32	+ 2.1385	S. 13 58 43.1	-6.709

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
TUESDAY 17.					THURSDAY 19.				
	^h ^m ^s	^s	[°] ['] ["]	["]		^h ^m ^s	^s	[°] ['] ["]	["]
0	14 54 44.32	+ 2.1385	S. 13 58 43.1	- 6.709	0	16 36 53.05	+ 2.1158	S. 17 45 42.1	- 2.677
1	14 56 52.62	2.1381	14 05 23.3	6.631	1	16 38 59.98	2.1153	17 48 20.1	2.589
2	14 59 00.89	2.1377	14 11 58.8	6.552	2	16 41 06.88	2.1147	17 50 52.8	2.502
3	15 01 09.14	2.1373	14 18 29.5	6.473	3	16 43 13.74	2.1140	17 53 20.3	2.414
4	15 03 17.36	2.1368	14 24 55.5	6.393	4	16 45 20.56	2.1133	17 55 42.5	2.327
5	15 05 25.56	2.1364	14 31 16.7	6.313	5	16 47 27.34	2.1127	17 57 59.5	2.240
6	15 07 33.73	2.1360	14 37 33.1	6.233	6	16 49 34.08	2.1120	18 00 11.3	2.153
7	15 09 41.88	2.1357	14 43 44.7	6.153	7	16 51 40.78	2.1113	18 02 17.8	2.065
8	15 11 50.01	2.1353	14 49 51.5	6.073	8	16 53 47.44	2.1107	18 04 19.1	1.978
9	15 13 58.11	2.1348	14 55 53.5	5.993	9	16 55 54.06	2.1100	18 06 15.1	1.889
10	15 16 06.19	2.1344	15 01 50.6	5.911	10	16 58 00.64	2.1093	18 08 05.8	1.802
11	15 18 14.24	2.1340	15 07 42.8	5.829	11	17 00 07.17	2.1085	18 09 51.3	1.714
12	15 20 22.27	2.1336	15 13 30.1	5.748	12	17 02 13.66	2.1078	18 11 31.5	1.627
13	15 22 30.27	2.1332	15 19 12.5	5.666	13	17 04 20.11	2.1071	18 13 06.5	1.540
14	15 24 38.25	2.1328	15 24 50.0	5.583	14	17 06 26.51	2.1063	18 14 36.3	1.453
15	15 26 46.20	2.1323	15 30 22.5	5.500	15	17 08 32.86	2.1055	18 16 00.9	1.366
16	15 28 54.13	2.1319	15 35 50.0	5.418	16	17 10 39.17	2.1048	18 17 20.2	1.278
17	15 31 02.03	2.1315	15 41 12.6	5.335	17	17 12 45.44	2.1041	18 18 34.3	1.192
18	15 33 09.91	2.1311	15 46 30.2	5.251	18	17 14 51.66	2.1033	18 19 43.2	1.104
19	15 35 17.76	2.1307	15 51 42.7	5.168	19	17 16 57.83	2.1026	18 20 46.8	1.017
20	15 37 25.59	2.1303	15 56 50.3	5.084	20	17 19 03.95	2.1018	18 21 45.2	0.930
21	15 39 33.39	2.1298	16 01 52.8	5.000	21	17 21 10.02	2.1008	18 22 38.4	0.843
22	15 41 41.17	2.1294	16 06 50.3	4.916	22	17 23 16.05	2.1000	18 23 26.4	0.757
23	15 43 48.92	+ 2.1288	S. 16 11 42.7	- 4.831	23	17 25 22.02	+ 2.0991	S. 18 24 09.2	- 0.669
WEDNESDAY 18.					FRIDAY 20.				
	^h ^m ^s	^s	[°] ['] ["]	["]		^h ^m ^s	^s	[°] ['] ["]	["]
0	15 45 56.63	+ 2.1283	S. 16 16 30.0	- 4.747	0	17 27 27.94	+ 2.0983	S. 18 24 46.7	- 0.583
1	15 48 04.32	2.1280	16 21 12.3	4.663	1	17 29 33.82	2.0975	18 25 19.1	0.496
2	15 50 11.99	2.1276	16 25 49.5	4.578	2	17 31 39.64	2.0966	18 25 46.2	0.409
3	15 52 19.63	2.1271	16 30 21.6	4.492	3	17 33 45.41	2.0957	18 26 08.2	0.323
4	15 54 27.24	2.1266	16 34 48.5	4.407	4	17 35 51.12	2.0948	18 26 25.0	0.237
5	15 56 34.82	2.1262	16 39 10.4	4.322	5	17 37 56.79	2.0940	18 26 36.6	0.151
6	15 58 42.38	2.1257	16 43 27.1	4.236	6	17 40 02.40	2.0930	18 26 43.1	- 0.065
7	16 00 49.90	2.1252	16 47 38.7	4.150	7	17 42 07.95	2.0922	18 26 44.4	+ 0.022
8	16 02 57.40	2.1248	16 51 45.1	4.064	8	17 44 13.46	2.0913	18 26 40.5	0.108
9	16 05 04.87	2.1243	16 55 46.4	3.978	9	17 46 18.91	2.0903	18 26 31.5	0.193
10	16 07 12.31	2.1237	16 59 42.5	3.892	10	17 48 24.30	2.0893	18 26 17.3	0.279
11	16 09 19.71	2.1232	17 03 33.4	3.806	11	17 50 29.63	2.0884	18 25 58.0	0.365
12	16 11 27.09	2.1228	17 07 19.2	3.719	12	17 52 34.91	2.0875	18 25 33.5	0.451
13	16 13 34.44	2.1222	17 10 59.7	3.633	13	17 54 40.13	2.0865	18 25 03.9	0.536
14	16 15 41.75	2.1216	17 14 35.1	3.546	14	17 56 45.29	2.0856	18 24 29.2	0.621
15	16 17 49.03	2.1211	17 18 05.2	3.459	15	17 58 50.40	2.0847	18 23 49.4	0.706
16	16 19 56.28	2.1206	17 21 30.2	3.373	16	18 00 55.45	2.0837	18 23 04.5	0.791
17	16 22 03.50	2.1200	17 24 49.9	3.286	17	18 03 00.44	2.0827	18 22 14.5	0.875
18	16 24 10.68	2.1194	17 28 04.5	3.199	18	18 05 05.37	2.0817	18 21 19.5	0.959
19	16 26 17.83	2.1189	17 31 13.8	3.112	19	18 07 10.24	2.0807	18 20 19.4	1.044
20	16 28 24.95	2.1183	17 34 17.9	3.025	20	18 09 15.05	2.0797	18 19 14.2	1.129
21	16 30 32.03	2.1177	17 37 16.8	2.938	21	18 11 19.80	2.0787	18 18 03.9	1.213
22	16 32 39.07	2.1171	17 40 10.5	2.851	22	18 13 24.49	2.0777	18 16 48.7	1.296
23	16 34 46.08	2.1165	17 42 58.9	2.763	23	18 15 29.12	2.0767	18 15 28.4	1.380
24	16 36 53.05	+ 2.1158	S. 17 45 42.1	- 2.677	24	18 17 33.69	+ 2.0757	S. 18 14 03.1	+ 1.463

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
SATURDAY 21.					MONDAY 23.				
0	18 17 33.69	+ 2.0757	S. 18 14 03.1	+ 1.463	0	19 55 57.37	+ 2.0246	S. 15 31 43.3	+ 5.200
1	18 19 38.20	2.0746	18 12 32.8	1.547	1	19 57 58.82	2.0237	15 26 29.2	5.270
2	18 21 42.64	2.0735	18 10 57.5	1.630	2	20 00 00.21	2.0227	15 21 10.9	5.341
3	18 23 47.02	2.0724	18 09 17.2	1.713	3	20 02 01.54	2.0218	15 15 48.3	5.412
4	18 25 51.33	2.0714	18 07 31.9	1.797	4	20 04 02.82	2.0208	15 10 21.5	5.481
5	18 27 55.59	2.0704	18 05 41.6	1.879	5	20 06 04.04	2.0199	15 04 50.6	5.550
6	18 29 59.78	2.0693	18 03 46.4	1.961	6	20 08 05.21	2.0190	14 59 15.5	5.620
7	18 32 03.90	2.0683	18 01 46.3	2.042	7	20 10 06.32	2.0180	14 53 36.2	5.689
8	18 34 07.97	2.0672	17 59 41.3	2.125	8	20 12 07.37	2.0171	14 47 52.8	5.758
9	18 36 11.97	2.0661	17 57 31.3	2.207	9	20 14 08.37	2.0163	14 42 05.3	5.826
10	18 38 15.90	2.0650	17 55 16.4	2.288	10	20 16 09.32	2.0154	14 36 13.7	5.894
11	18 40 19.77	2.0640	17 52 56.7	2.370	11	20 18 10.22	2.0146	14 30 18.0	5.962
12	18 42 23.58	2.0629	17 50 32.0	2.452	12	20 20 11.07	2.0138	14 24 18.2	6.029
13	18 44 27.32	2.0618	17 48 02.5	2.532	13	20 22 11.87	2.0128	14 18 14.5	6.094
14	18 46 31.00	2.0608	17 45 28.2	2.613	14	20 24 12.61	2.0120	14 12 06.9	6.160
15	18 48 34.61	2.0597	17 42 49.0	2.693	15	20 26 13.31	2.0112	14 05 55.3	6.227
16	18 50 38.16	2.0586	17 40 05.0	2.773	16	20 28 13.96	2.0104	13 59 39.7	6.293
17	18 52 41.64	2.0574	17 37 16.2	2.853	17	20 30 14.56	2.0097	13 53 20.2	6.358
18	18 54 45.05	2.0563	17 34 22.6	2.933	18	20 32 15.12	2.0089	13 46 56.8	6.422
19	18 56 48.40	2.0553	17 31 24.2	3.013	19	20 34 15.63	2.0082	13 40 29.6	6.486
20	18 58 51.68	2.0542	17 28 21.0	3.093	20	20 36 16.10	2.0074	13 33 58.5	6.550
21	19 00 54.90	2.0531	17 25 13.1	3.171	21	20 38 16.52	2.0067	13 27 23.6	6.613
22	19 02 58.05	2.0519	17 22 00.5	3.250	22	20 40 16.90	2.0060	13 20 44.9	6.677
23	19 05 01.13	+ 2.0508	S. 17 18 43.1	+ 3.329	23	20 42 17.24	+ 2.0053	S. 13 14 02.4	+ 6.739
SUNDAY 22.					TUESDAY 24.				
0	19 07 04.14	+ 2.0498	S. 17 15 21.0	+ 3.408	0	20 44 17.54	+ 2.0047	S. 13 07 16.2	+ 6.802
1	19 09 07.10	2.0488	17 11 54.2	3.487	1	20 46 17.80	2.0040	13 00 26.2	6.864
2	19 11 09.99	2.0476	17 08 22.8	3.563	2	20 48 18.02	2.0034	12 53 32.5	6.925
3	19 13 12.81	2.0465	17 04 46.7	3.640	3	20 50 18.21	2.0028	12 46 35.2	6.986
4	19 15 15.57	2.0454	17 01 06.0	3.717	4	20 52 18.36	2.0022	12 39 34.2	7.047
5	19 17 18.26	2.0443	16 57 20.7	3.794	5	20 54 18.47	2.0016	12 32 29.6	7.108
6	19 19 20.89	2.0433	16 53 30.7	3.872	6	20 56 18.55	2.0011	12 25 21.3	7.168
7	19 21 23.45	2.0422	16 49 36.1	3.948	7	20 58 18.60	2.0005	12 18 09.5	7.226
8	19 23 25.95	2.0411	16 45 37.0	4.023	8	21 00 18.61	2.0000	12 10 54.2	7.285
9	19 25 28.38	2.0400	16 41 33.3	4.099	9	21 02 18.60	1.9995	12 03 35.3	7.344
10	19 27 30.75	2.0390	16 37 25.1	4.175	10	21 04 18.55	1.9990	11 56 12.9	7.402
11	19 29 33.06	2.0379	16 33 12.3	4.250	11	21 06 18.48	1.9986	11 48 47.1	7.459
12	19 31 35.30	2.0368	16 28 55.1	4.324	12	21 08 18.38	1.9981	11 41 17.8	7.517
13	19 33 37.48	2.0358	16 24 33.4	4.399	13	21 10 18.25	1.9977	11 33 45.1	7.573
14	19 35 39.60	2.0348	16 20 07.2	4.474	14	21 12 18.10	1.9973	11 26 09.0	7.629
15	19 37 41.65	2.0337	16 15 36.5	4.548	15	21 14 17.93	1.9969	11 18 29.6	7.685
16	19 39 43.64	2.0327	16 11 01.4	4.622	16	21 16 17.73	1.9966	11 10 46.8	7.741
17	19 41 45.57	2.0317	16 06 21.9	4.695	17	21 18 17.52	1.9963	11 03 00.7	7.796
18	19 43 47.44	2.0307	16 01 38.0	4.768	18	21 20 17.29	1.9960	10 55 11.3	7.850
19	19 45 49.25	2.0296	15 56 49.7	4.841	19	21 22 17.04	1.9957	10 47 18.7	7.903
20	19 47 50.99	2.0286	15 51 57.1	4.913	20	21 24 16.77	1.9954	10 39 22.9	7.958
21	19 49 52.68	2.0276	15 47 00.1	4.986	21	21 26 16.49	1.9952	10 31 23.8	8.011
22	19 51 54.30	2.0266	15 41 58.8	5.058	22	21 28 16.19	1.9949	10 23 21.6	8.063
23	19 53 55.87	2.0256	15 36 53.2	5.129	23	21 30 15.88	1.9947	10 15 16.3	8.114
24	19 55 57.37	+ 2.0246	S. 15 31 43.3	+ 5.200	24	21 32 15.56	+ 1.9946	S. 10 07 07.9	+ 8.166

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
WEDNESDAY 25.					FRIDAY 27.				
	^h ^m ^s	^s	[°] ['] ["]	["]		^h ^m ^s	^s	[°] ['] ["]	["]
0	21 32 15.56	+ 1.9946	S. 10 07 07.9	+ 8.166	0	23 08 19.83	+ 2.0200	S. 2 46 16.9	+ 9.968
1	21 34 15.23	1.9944	9 58 56.4	8.218	1	23 10 21.07	2.0213	2 36 18.2	9.989
2	21 36 14.89	1.9943	9 50 41.8	8.268	2	23 12 22.38	2.0225	2 26 18.2	10.010
3	21 38 14.55	1.9943	9 42 24.3	8.318	3	23 14 23.77	2.0239	2 16 17.0	10.030
4	21 40 14.20	1.9942	9 34 03.7	8.368	4	23 16 25.25	2.0253	2 06 14.6	10.050
5	21 42 13.85	1.9942	9 25 40.2	8.417	5	23 18 26.81	2.0268	1 56 11.0	10.068
6	21 44 13.50	1.9942	9 17 13.7	8.465	6	23 20 28.46	2.0283	1 46 06.4	10.086
7	21 46 13.15	1.9942	9 08 44.4	8.513	7	23 22 30.20	2.0298	1 36 00.7	10.103
8	21 48 12.80	1.9942	9 00 12.2	8.560	8	23 24 32.03	2.0313	1 25 54.0	10.120
9	21 50 12.45	1.9943	8 51 37.2	8.607	9	23 26 33.96	2.0329	1 15 46.3	10.135
10	21 52 12.11	1.9943	8 42 59.4	8.653	10	23 28 35.98	2.0344	1 05 37.8	10.150
11	21 54 11.77	1.9944	8 34 18.8	8.699	11	23 30 38.09	2.0360	0 55 28.3	10.164
12	21 56 11.44	1.9946	8 25 35.5	8.744	12	23 32 40.30	2.0378	0 45 18.1	10.177
13	21 58 11.12	1.9948	8 16 49.5	8.789	13	23 34 42.62	2.0395	0 35 07.1	10.189
14	22 00 10.81	1.9950	8 08 00.8	8.833	14	23 36 45.04	2.0412	0 24 55.4	10.201
15	22 02 10.52	1.9953	7 59 09.5	8.877	15	23 38 47.56	2.0430	0 14 43.0	10.212
16	22 04 10.24	1.9955	7 50 15.6	8.919	16	23 40 50.20	2.0448	S. 0 04 30.0	10.222
17	22 06 09.98	1.9958	7 41 19.2	8.962	17	23 42 52.94	2.0467	N. 0 05 43.6	10.231
18	22 08 09.73	1.9960	7 32 20.2	9.004	18	23 44 55.80	2.0486	0 15 57.7	10.239
19	22 10 09.50	1.9964	7 23 18.7	9.046	19	23 46 58.77	2.0504	0 26 12.3	10.247
20	22 12 09.30	1.9968	7 14 14.7	9.087	20	23 49 01.85	2.0523	0 36 27.3	10.253
21	22 14 09.12	1.9972	7 05 08.3	9.127	21	23 51 05.05	2.0544	0 46 42.6	10.258
22	22 16 08.96	1.9976	6 55 59.5	9.166	22	23 53 08.38	2.0564	0 56 58.3	10.263
23	22 18 08.83	+ 1.9981	S. 6 46 48.4	+ 9.204	23	23 55 11.82	+ 2.0584	N. 1 07 14.2	+ 10.268
THURSDAY 26.					SATURDAY 28.				
0	22 20 08.73	+ 1.9986	S. 6 37 35.0	+ 9.243	0	23 57 15.39	+ 2.0606	N. 1 17 30.4	+ 10.271
1	22 22 08.66	1.9991	6 28 19.3	9.281	1	23 59 19.09	2.0627	1 27 46.7	10.273
2	22 24 08.62	1.9997	6 19 01.3	9.318	2	0 01 22.91	2.0648	1 38 03.2	10.275
3	22 26 08.62	2.0003	6 09 41.2	9.353	3	0 03 26.86	2.0670	1 48 19.7	10.275
4	22 28 08.66	2.0009	6 00 18.9	9.390	4	0 05 30.95	2.0693	1 58 36.2	10.274
5	22 30 08.73	2.0015	5 50 54.4	9.426	5	0 07 35.17	2.0715	2 08 52.6	10.273
6	22 32 08.84	2.0022	5 41 27.8	9.460	6	0 09 39.53	2.0738	2 19 09.0	10.272
7	22 34 08.99	2.0029	5 31 59.2	9.493	7	0 11 44.02	2.0761	2 29 25.2	10.268
8	22 36 09.19	2.0037	5 22 28.6	9.527	8	0 13 48.66	2.0785	2 39 41.2	10.264
9	22 38 09.43	2.0044	5 12 56.0	9.560	9	0 15 53.44	2.0808	2 49 56.9	10.259
10	22 40 09.72	2.0053	5 03 21.4	9.592	10	0 17 58.36	2.0832	3 00 12.3	10.254
11	22 42 10.06	2.0061	4 53 44.9	9.623	11	0 20 03.42	2.0857	3 10 27.4	10.248
12	22 44 10.45	2.0069	4 44 06.7	9.653	12	0 22 08.64	2.0883	3 20 42.0	10.240
13	22 46 10.89	2.0078	4 34 26.6	9.683	13	0 24 14.01	2.0907	3 30 56.2	10.232
14	22 48 11.36	2.0088	4 24 44.7	9.713	14	0 26 19.52	2.0932	3 41 09.8	10.222
15	22 50 11.95	2.0098	4 15 01.0	9.742	15	0 28 25.19	2.0958	3 51 22.8	10.211
16	22 52 12.56	2.0108	4 05 15.7	9.769	16	0 30 31.02	2.0984	4 01 35.1	10.200
17	22 54 13.24	2.0118	3 55 28.7	9.797	17	0 32 37.00	2.1011	4 11 46.8	10.188
18	22 56 13.98	2.0128	3 45 40.1	9.823	18	0 34 43.15	2.1038	4 21 57.7	10.175
19	22 58 14.78	2.0139	3 35 49.9	9.849	19	0 36 49.46	2.1065	4 32 07.8	10.161
20	23 00 15.65	2.0150	3 25 58.2	9.874	20	0 38 55.93	2.1092	4 42 17.0	10.145
21	23 02 16.58	2.0162	3 16 05.0	9.899	21	0 41 02.56	2.1119	4 52 25.2	10.129
22	23 04 17.59	2.0174	3 06 10.3	9.923	22	0 43 09.36	2.1148	5 02 32.5	10.113
23	23 06 18.67	2.0187	2 56 14.3	9.945	23	0 45 16.33	2.1175	5 12 38.7	10.094
24	23 08 19.83	+ 2.0200	S. 2 46 16.9	+ 9.968	24	0 47 23.46	+ 2.1203	N. 5 22 43.8	+ 10.075

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
SUNDAY 29.					TUESDAY 31.				
0	0 47 23.46	+ 2.1203	N. 5 22 43.8	+ 10.075	0	2 32 54.27	+ 2.2823	N. 12 45 08.8	+ 7.959
1	0 49 30.77	2.1233	5 32 47.7	10.055	1	2 35 11.32	2.2859	12 53 04.3	7.889
2	0 51 38.26	2.1263	5 42 50.4	10.034	2	2 37 28.58	2.2895	13 00 55.5	7.818
3	0 53 45.92	2.1291	5 52 51.8	10.013	3	2 39 46.06	2.2931	13 08 42.5	7.747
4	0 55 53.75	2.1321	6 02 51.9	9.990	4	2 42 03.75	2.2967	13 16 25.1	7.673
5	0 58 01.77	2.1352	6 12 50.6	9.966	5	2 44 21.67	2.3004	13 24 03.3	7.600
6	1 00 09.97	2.1382	6 22 47.8	9.941	6	2 46 39.80	2.3039	13 31 37.1	7.525
7	1 02 18.35	2.1412	6 32 43.5	9.915	7	2 48 58.14	2.3075	13 39 06.3	7.449
8	1 04 26.91	2.1443	6 42 37.6	9.888	8	2 51 16.70	2.3112	13 46 31.0	7.373
9	1 06 35.66	2.1473	6 52 30.0	9.860	9	2 53 35.48	2.3148	13 53 51.1	7.296
10	1 08 44.59	2.1504	7 02 20.8	9.832	10	2 55 54.47	2.3183	14 01 06.5	7.217
11	1 10 53.71	2.1536	7 12 09.8	9.801	11	2 58 13.67	2.3218	14 08 17.1	7.137
12	1 13 03.02	2.1568	7 21 56.9	9.769	12	3 00 33.08	2.3253	14 15 22.9	7.057
13	1 15 12.52	2.1600	7 31 42.1	9.738	13	3 02 52.71	2.3288	14 22 23.9	6.975
14	1 17 22.22	2.1633	7 41 25.4	9.705	14	3 05 12.54	2.3323	14 29 19.9	6.892
15	1 19 32.11	2.1664	7 51 06.7	9.671	15	3 07 32.59	2.3359	14 36 10.9	6.808
16	1 21 42.19	2.1697	8 00 45.9	9.635	16	3 09 52.85	2.3393	14 42 56.9	6.724
17	1 23 52.47	2.1730	8 10 22.9	9.599	17	3 12 13.31	2.3428	14 49 37.8	6.638
18	1 26 02.95	2.1763	8 19 57.8	9.562	18	3 14 33.98	2.3462	14 56 13.5	6.552
19	1 28 13.63	2.1797	8 29 30.4	9.523	19	3 16 54.85	2.3496	15 02 44.0	6.464
20	1 30 24.51	2.1830	8 39 00.6	9.484	20	3 19 15.93	2.3530	15 09 09.2	6.376
21	1 32 35.59	2.1863	8 48 28.5	9.445	21	3 21 37.21	2.3564	15 15 29.1	6.288
22	1 34 46.87	2.1898	8 57 54.0	9.403	22	3 23 58.70	2.3598	15 21 43.7	6.198
23	1 36 58.36	+ 2.1932	N. 9 07 16.9	+ 9.361	23	3 26 20.38	+ 2.3630	N. 15 27 52.8	+ 6.106
MONDAY 30.					WEDNESDAY, APRIL 1, 1903.				
0	1 39 10.05	+ 2.1966	N. 9 16 37.3	+ 9.318	0	3 28 42.26	+ 2.3663	N. 15 33 56.4	+ 6.014
1	1 41 21.95	2.2001	9 25 55.0	9.273	PHASES OF THE MOON.				
2	1 43 34.06	2.2035	9 35 10.0	9.227					
3	1 45 46.37	2.2070	9 44 22.2	9.180					
4	1 47 58.90	2.2105	9 53 31.6	9.133					
5	1 50 11.63	2.2139	10 02 38.1	9.084	<div></div> <div>d h m</div> <div>☾ First Quarter . . . Mar. 6 07 14.0</div> <div>○ Full Moon 13 00 12.9</div> <div>☾ Last Quarter 20 14 07.8</div> <div>● New Moon 28 13 26.1</div>				
6	1 52 24.57	2.2173	10 11 41.7	9.035					
7	1 54 37.73	2.2211	10 20 42.3	8.984					
8	1 56 51.10	2.2246	10 29 39.8	8.932					
9	1 59 04.68	2.2281	10 38 34.1	8.878	<div></div> <div>d h</div> <div>☾ Perigee Mar. 10 00.9</div> <div>☾ Apogee 21 20.6</div>				
10	2 01 18.47	2.2317	10 47 25.2	8.825					
11	2 03 32.48	2.2353	10 56 13.1	8.770					
12	2 05 46.70	2.2388	11 04 57.6	8.713					
13	2 08 01.14	2.2424	11 13 38.7	8.657					
14	2 10 15.79	2.2460	11 22 16.4	8.598					
15	2 12 30.66	2.2497	11 30 50.5	8.538					
16	2 14 45.75	2.2533	11 39 21.0	8.478					
17	2 17 01.06	2.2569	11 47 47.9	8.418					
18	2 19 16.58	2.2605	11 56 11.1	8.355					
19	2 21 32.32	2.2641	12 04 30.5	8.292					
20	2 23 48.27	2.2677	12 12 46.1	8.228					
21	2 26 04.44	2.2713	12 20 57.8	8.162					
22	2 28 20.83	2.2750	12 29 05.5	8.095					
23	2 30 37.44	2.2787	12 37 09.2	8.028					
24	2 32 54.27	+ 2.2823	N. 12 45 08.8	+ 7.959					

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.	Noon.	P. L. of Diff.	IIIh	P. L. of Diff.	VIh	P. L. of Diff.	IXh	P. L. of Diff.
		° ' "		° ' "		° ' "		° ' "	
1	SUN W.	24 09 32	3079	25 38 07	3065	27 07 00	3052	28 36 09	3040
	Aldebaran E.	64 48 38	2690	63 11 45	2682	61 34 41	2673	59 57 25	2665
	Pollux E.	107 44 45	2791	106 10 05	2781	104 35 12	2771	103 00 06	2761
2	SUN W.	36 05 27	2985	37 35 59	2973	39 06 45	2963	40 37 44	2954
	Aldebaran E.	51 48 15	2623	50 09 51	2615	48 31 16	2606	46 52 29	2598
	Pollux E.	95 01 26	2715	93 25 06	2707	91 48 35	2698	90 11 52	2689
3	SUN W.	48 15 47	2905	49 48 00	2894	51 20 26	2885	52 53 04	2875
	Aldebaran E.	38 35 47	2557	36 55 53	2548	35 15 47	2540	33 35 30	2533
	Pollux E.	82 05 30	2649	80 27 42	2643	78 49 45	2635	77 11 38	2628
	Regulus E.	118 29 51	2569	116 50 14	2561	115 10 25	2552	113 30 24	2543
4	SUN W.	60 39 20	2828	62 13 11	2818	63 47 15	2809	65 21 31	2800
	Aldebaran E.	25 11 23	2494	23 30 02	2487	21 48 30	2479	20 06 47	2472
	Pollux E.	68 58 43	2596	67 19 42	2591	65 40 34	2583	64 01 18	2580
	Regulus E.	105 07 17	2500	103 26 04	2491	101 44 38	2483	100 03 01	2474
5	SUN W.	73 15 54	2753	74 51 23	2744	76 27 05	2735	78 02 59	2725
	α Arietis W.	24 33 16	2971	26 04 00	2903	27 36 17	2842	29 09 53	2787
	Pollux E.	55 43 28	2561	54 03 39	2559	52 23 48	2558	50 43 55	2557
	Regulus E.	91 31 53	2432	89 49 04	2423	88 06 02	2415	86 22 49	2406
6	SUN W.	86 05 31	2680	87 42 38	2671	89 19 57	2662	90 57 28	2653
	α Arietis W.	37 12 48	2602	38 51 40	2575	40 31 09	2551	42 11 11	2530
	Regulus E.	77 43 43	2365	75 59 18	2358	74 14 43	2349	72 29 55	2342
	MARS E.	123 58 21	2301	122 12 23	2291	120 26 11	2283	118 39 46	2274
7	SUN W.	99 08 00	2610	100 46 41	2602	102 25 33	2594	104 04 36	2586
	α Arietis W.	50 38 22	2440	52 21 00	2425	54 03 59	2411	55 47 18	2398
	Aldebaran W.	16 25 30	2302	18 11 27	2292	19 57 38	2283	21 44 02	2274
	Regulus E.	63 43 10	2304	61 57 17	2297	60 11 13	2290	58 24 59	2283
	MARS E.	109 44 32	2232	107 56 52	2224	106 09 00	2216	104 20 56	2208
	Spica E.	117 15 25	2294	115 29 17	2286	113 42 57	2279	111 56 26	2272
8	SUN W.	112 22 29	2550	114 02 33	2543	115 42 46	2538	117 23 07	2531
	α Arietis W.	64 28 10	2344	66 13 06	2335	67 58 15	2326	69 43 37	2318
	Aldebaran W.	30 39 04	2237	32 26 37	2231	34 14 19	2224	36 02 11	2218
	Regulus E.	49 31 31	2254	47 44 24	2249	45 57 10	2245	44 09 50	2241
	MARS E.	95 17 49	2172	93 28 40	2166	91 39 21	2159	89 49 52	2154
	Spica E.	103 01 15	2237	101 13 43	2231	99 26 02	2225	97 38 12	2219
9	α Arietis W.	78 33 06	2285	80 19 27	2281	82 05 54	2277	83 52 28	2272
	Aldebaran W.	45 03 32	2193	46 52 10	2190	48 40 53	2186	50 29 42	2182
	Regulus E.	35 11 57	2231	33 24 15	2231	31 36 33	2231	29 48 52	2233
	MARS E.	80 40 24	2128	78 50 08	2124	76 59 46	2120	75 09 18	2118
	Spica E.	88 37 03	2195	86 48 28	2192	84 59 48	2188	83 11 03	2185
10	α Arietis W.	92 46 23	2264	94 33 16	2263	96 20 10	2264	98 07 03	2264
	Aldebaran W.	59 34 48	2172	61 23 57	2172	63 13 06	2172	65 02 16	2172
	MARS E.	65 55 58	2107	64 05 10	2107	62 14 21	2106	60 23 31	2107
	Spica E.	74 06 20	2176	72 17 17	2176	70 28 13	2176	68 39 09	2176

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.	Midnight.	P. L. of Diff.	XVh	P. L. of Diff.	XVIIIh	P. L. of Diff.	XXIh	P. L. of Diff.
		° ' "		° ' "		° ' "		° ' "	
1	SUN W.	30 05 32	3029	31 35 09	3017	33 05 01	3005	34 35 07	2994
	Aldebaran E.	58 19 58	2656	56 42 19	2648	55 04 29	2640	53 26 28	2631
	Pollux E.	101 24 47	2751	99 49 15	2742	98 13 31	2732	96 37 34	2724
2	SUN W.	42 08 55	2943	43 40 19	2933	45 11 56	2924	46 43 45	2913
	Aldebaran E.	45 13 31	2590	43 34 22	2582	41 55 02	2573	40 15 30	2565
	Pollux E.	88 34 57	2681	86 57 51	2673	85 20 35	2665	83 43 08	2657
3	SUN W.	54 25 55	2866	55 58 58	2856	57 32 13	2847	59 05 40	2837
	Aldebaran E.	31 55 03	2525	30 14 24	2517	28 33 35	2509	26 52 34	2502
	Pollux E.	75 33 21	2621	73 54 55	2615	72 16 20	2608	70 37 36	2601
	Regulus E.	111 50 10	2535	110 09 45	2526	108 29 08	2517	106 48 19	2508
4	SUN W.	66 55 59	2791	68 30 39	2781	70 05 32	2772	71 40 37	2763
	Aldebaran E.	18 24 55	2467	16 42 55	2462	15 00 48	2457	13 18 34	2453
	Pollux E.	62 21 56	2575	60 42 27	2571	59 02 52	2567	57 23 12	2564
	Regulus E.	98 21 11	2466	96 39 10	2457	94 56 56	2449	93 14 31	2440
5	SUN W.	79 39 05	2716	81 15 23	2707	82 51 53	2698	84 28 36	2689
	α Arietis W.	30 44 38	2740	32 20 25	2698	33 57 07	2663	35 34 36	2652
	Pollux E.	49 04 01	2557	47 24 07	2559	45 44 16	2561	44 04 28	2566
	Regulus E.	84 39 23	2398	82 55 46	2390	81 11 57	2382	79 27 56	2373
6	SUN W.	92 35 11	2644	94 13 06	2636	95 51 12	2627	97 29 30	2618
	α Arietis W.	43 51 43	2509	45 32 44	2489	47 14 12	2472	48 56 05	2455
	Regulus E.	70 44 56	2334	68 59 46	2326	67 14 25	2319	65 28 53	2311
	MARS E.	116 53 09	2266	115 06 19	2257	113 19 16	2248	111 32 00	2240
7	SUN W.	105 43 50	2579	107 23 14	2571	109 02 49	2564	110 42 34	2557
	α Arietis W.	57 30 55	2386	59 14 50	2375	60 59 01	2364	62 43 28	2353
	Aldebaran W.	23 30 39	2266	25 17 28	2258	27 04 29	2251	28 51 41	2243
	Regulus E.	56 38 35	2277	54 52 02	2271	53 05 20	2266	51 18 30	2260
	MARS E.	102 32 41	2200	100 44 14	2194	98 55 37	2186	97 06 48	2179
	Spica E.	110 09 45	2264	108 22 53	2257	106 35 50	2250	104 48 37	2244
8	SUN W.	119 03 37	2525	120 44 15	2520	122 25 01	2515	124 05 53	2511
	α Arietis W.	71 29 10	2311	73 14 54	2303	75 00 49	2297	76 46 53	2291
	Aldebaran W.	37 50 11	2213	39 38 19	2207	41 26 36	2202	43 15 00	2197
	Regulus E.	42 22 24	2238	40 34 53	2235	38 47 17	2233	36 59 38	2231
	MARS E.	88 00 15	2148	86 10 29	2143	84 20 35	2137	82 30 33	2133
	Spica E.	95 50 13	2214	94 02 06	2210	92 13 53	2204	90 25 32	2199
9	α Arietis W.	85 39 08	2270	87 25 52	2267	89 12 40	2266	90 59 30	2264
	Aldebaran W.	52 18 36	2180	54 07 34	2177	55 56 36	2175	57 45 41	2174
	Regulus E.	28 01 14	2238	26 13 43	2245	24 26 22	2253	22 39 13	2262
	MARS E.	73 18 46	2115	71 28 09	2112	69 37 28	2110	67 46 44	2109
	Spica E.	81 22 13	2182	79 33 19	2180	77 44 22	2178	75 55 22	2177
10	α Arietis W.	99 53 55	2266	101 40 44	2269	103 27 29	2272	105 14 10	2276
	Aldebaran W.	66 51 25	2173	68 40 33	2174	70 29 40	2175	72 18 45	2178
	MARS E.	58 32 42	2107	56 41 54	2109	54 51 09	2111	53 00 26	2113
	Spica E.	66 50 05	2177	65 01 03	2178	63 12 03	2180	61 23 05	2182

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.	Noon.	P. L. of Diff.	III ^h	P. L. of Diff.	VI ^h	P. L. of Diff.	IX ^h	P. L. of Diff.
		° ' "		° ' "		° ' "		° ' "	
10	Antares E.	119 28 08	2236	117 40 34	2233	115 52 56	2231	114 05 15	2231
11	α Arietis W.	107 00 45	2281	108 47 13	2287	110 33 32	2293	112 19 42	2299
	Aldebaran W.	74 07 46	2181	75 56 42	2184	77 45 34	2187	79 34 21	2192
	Pollux W.	32 46 44	2500	34 27 57	2477	36 09 42	2457	37 51 56	2439
	MARS E.	51 09 47	2116	49 19 13	2120	47 28 44	2124	45 38 21	2129
	Spica E.	59 34 11	2186	57 45 22	2189	55 56 38	2193	54 08 00	2197
	Antares E.	105 06 41	2233	103 19 03	2235	101 31 28	2238	99 43 56	2241
12	Aldebaran W.	88 36 23	2220	90 24 20	2227	92 12 07	2235	93 59 42	2243
	Pollux W.	46 27 46	2396	48 11 26	2394	49 55 09	2393	51 38 54	2394
	MARS E.	36 28 39	2163	34 39 16	2173	32 50 08	2182	31 01 14	2193
	Spica E.	45 06 48	2229	43 19 03	2237	41 31 30	2245	39 44 09	2254
	Antares E.	90 48 02	2269	89 01 17	2277	87 14 44	2285	85 28 22	2293
13	Aldebaran W.	102 54 21	2291	104 40 33	2303	106 26 28	2314	108 12 07	2326
	Pollux W.	60 16 50	2415	62 00 04	2421	63 43 09	2429	65 26 03	2436
	Regulus W.	23 16 41	2363	25 01 09	2367	26 45 31	2371	28 29 47	2378
	Spica E.	30 51 05	2309	29 05 19	2322	27 19 51	2336	25 34 44	2350
	Antares E.	76 39 52	2344	74 54 57	2356	73 10 19	2368	71 25 58	2381
	α Aquilæ E.	124 21 14	2894	122 48 48	2881	121 16 05	2871	119 43 09	2864
14	Pollux W.	73 57 12	2490	75 38 39	2503	77 19 48	2515	79 00 40	2528
	Regulus W.	37 08 32	2422	38 51 36	2433	40 34 23	2445	42 16 54	2458
	Antares E.	62 49 09	2454	61 06 51	2470	59 24 55	2487	57 43 23	2503
	α Aquilæ E.	111 57 00	2856	110 23 45	2866	108 50 35	2864	107 17 30	2870
	SATURN E.	120 18 27	2443	118 35 54	2456	116 53 39	2470	115 11 43	2483
15	Pollux W.	87 20 13	2601	88 59 07	2617	90 37 39	2632	92 15 50	2648
	Regulus W.	50 44 48	2527	52 25 24	2542	54 05 39	2556	55 45 34	2572
	Antares E.	49 21 52	2597	47 42 53	2618	46 04 22	2639	44 26 20	2661
	α Aquilæ E.	99 34 33	2917	98 02 36	2930	96 30 55	2942	94 59 30	2956
	SATURN E.	106 47 01	2556	105 07 06	2572	103 27 33	2588	101 48 21	2603
16	Pollux W.	100 21 16	2732	101 57 13	2749	103 32 48	2766	105 08 00	2784
	Regulus W.	63 59 54	2649	65 37 42	2664	67 15 10	2680	68 52 17	2695
	MARS W.	20 29 40	2596	22 08 41	2604	23 47 31	2613	25 26 08	2623
	Antares E.	36 23 57	2786	34 49 11	2815	33 15 03	2845	31 41 34	2879
	α Aquilæ E.	87 27 00	3035	85 57 31	3052	84 28 23	3071	82 59 38	3089
	SATURN E.	93 37 43	2683	92 00 40	2699	90 23 59	2715	88 47 39	2731
17	Regulus W.	76 52 42	2772	78 27 46	2787	80 02 31	2801	81 36 57	2816
	MARS W.	33 35 50	2678	35 13 00	2690	36 49 53	2701	38 26 31	2714
	Spica W.	23 20 11	2787	24 54 56	2798	26 29 26	2811	28 03 40	2823
	α Aquilæ E.	75 41 44	3191	74 15 24	3212	72 49 29	3234	71 24 00	3258
	SATURN E.	80 51 13	2810	79 16 58	2825	77 43 02	2839	76 09 25	2855
	SUN E.	130 17 59	3116	128 50 09	3133	127 22 39	3148	125 55 28	3163
18	Regulus W.	89 24 30	2885	90 57 08	2898	92 29 29	2911	94 01 34	2923
	MARS W.	46 25 36	2774	48 00 38	2786	49 35 24	2796	51 09 57	2808
	Spica W.	35 50 46	2886	37 23 23	2898	38 55 45	2909	40 27 52	2921
	α Aquilæ E.	64 23 37	3382	63 01 00	3409	61 38 54	3428	60 17 20	3466

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.	Midnight.	P. L. of Diff.	XVh	P. L. of Diff.	XVIIIh	P. L. of Diff.	XXIh	P. L. of Diff.
		° ' "		° ' "		° ' "		° ' "	
10	Antares E.	112 17 33	2230	110 29 50	2229	108 42 06	2230	106 54 23	2231
11	α Arietis W.	114 05 43	2307	115 51 32	2316	117 37 08	2326	119 22 30	2336
	Aldebaran W.	81 23 01	2196	83 11 34	2202	84 59 59	2207	86 48 16	2214
	Pollux W.	39 34 35	2426	41 17 33	2415	43 00 47	2407	44 44 12	2401
	MARS E.	43 48 06	2134	41 57 59	2141	40 08 02	2147	38 18 15	2155
	Spica E.	52 19 28	2202	50 31 04	2209	48 42 50	2214	46 54 44	2221
	Antares E.	97 56 30	2246	96 09 11	2251	94 22 00	2257	92 34 57	2262
12	Aldebaran W.	95 47 05	2252	97 34 15	2262	99 21 11	2271	101 07 53	2281
	Pollux W.	53 22 38	2396	55 06 19	2399	56 49 55	2403	58 33 26	2408
	MARS E.	29 12 36	2206	27 24 18	2220	25 36 21	2235	23 48 45	2251
	Spica E.	37 57 02	2264	36 10 09	2274	34 23 31	2285	32 37 09	2297
	Antares E.	83 42 11	2302	81 56 15	2311	80 10 32	2322	78 25 04	2333
13	Aldebaran W.	109 57 29	2338	111 42 33	2350	113 27 19	2363	115 11 47	2377
	Pollux W.	67 08 46	2446	68 51 15	2458	70 33 28	2467	72 15 27	2477
	Regulus W.	30 13 54	2384	31 57 52	2391	33 41 39	2401	35 25 13	2411
	Spica E.	23 49 58	2367	22 05 36	2385	20 21 40	2404	18 38 11	2424
	Antares E.	69 41 56	2394	67 58 13	2409	66 14 51	2423	64 31 49	2438
	α Aquilæ E.	118 10 04	2859	116 36 53	2855	115 03 37	2853	113 30 18	2854
14	Pollux W.	80 41 14	2543	82 21 28	2556	84 01 23	2571	85 40 58	2585
	Regulus W.	43 59 07	2471	45 41 01	2485	47 22 36	2498	49 03 52	2512
	Antares E.	56 02 14	2521	54 21 30	2539	52 41 11	2558	51 01 19	2577
	α Aquilæ E.	105 44 33	2878	104 11 46	2887	102 39 10	2895	101 06 45	2905
	SATURN E.	113 30 06	2497	111 48 49	2512	110 07 53	2527	108 27 17	2541
15	Pollux W.	93 53 40	2664	95 31 08	2682	97 08 12	2698	98 44 55	2714
	Regulus W.	57 25 08	2587	59 04 21	2602	60 43 13	2618	62 21 44	2633
	Antares E.	42 48 48	2684	41 11 47	2707	39 35 17	2732	37 59 20	2758
	α Aquilæ E.	93 28 22	2971	91 57 33	2985	90 27 02	3001	88 56 51	3018
	SATURN E.	100 09 30	2619	98 31 01	2635	96 52 54	2651	95 15 08	2666
16	Pollux W.	106 42 49	2801	108 17 15	2819	109 51 18	2836	111 24 59	2854
	Regulus W.	70 29 03	2711	72 05 28	2726	73 41 33	2741	75 17 18	2757
	MARS W.	27 04 32	2632	28 42 43	2642	30 20 41	2654	31 58 23	2665
	Antares E.	30 08 48	2916	28 36 49	2955	27 05 40	2998	25 35 25	3045
	α Aquilæ E.	81 31 15	3109	80 03 16	3129	78 35 41	3148	77 08 30	3169
	SATURN E.	87 11 40	2747	85 36 03	2763	84 00 46	2778	82 25 49	2794
17	Regulus W.	83 11 04	2831	84 44 52	2845	86 18 22	2858	87 51 35	2872
	MARS W.	40 02 52	2726	41 38 57	2739	43 14 45	2750	44 50 18	2762
	Spica W.	29 37 38	2836	31 11 19	2848	32 44 44	2861	34 17 53	2873
	α Aquilæ E.	69 58 59	3282	68 34 26	3305	67 10 20	3331	65 46 44	3356
	SATURN E.	74 36 08	2869	73 03 10	2884	71 30 31	2898	69 58 10	2912
	SUN E.	124 28 35	3179	123 02 01	3194	121 35 45	3209	120 09 46	3224
18	Regulus W.	95 33 24	2935	97 04 58	2946	98 36 18	2958	100 07 24	2969
	MARS W.	52 44 15	2818	54 18 19	2828	55 52 10	2838	57 25 48	2848
	Spica W.	41 59 44	2932	43 31 22	2943	45 02 46	2954	46 33 57	2964
	α Aquilæ E.	58 56 18	3496	57 35 49	3528	56 15 56	3560	54 56 38	3595

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.	Noon.	P. L. of Diff.	IIIh	P. L. of Diff.	VIh	P. L. of Diff.	IXh	P. L. of Diff.
		° ' "		° ' "		° ' "		° ' "	
18	SATURN E.	68 26 06	2926	66 54 20	2940	65 22 52	2953	63 51 40	2965
	SUN E.	118 44 05	3238	117 18 41	3252	115 53 33	3265	114 28 41	3278
19	Regulus W.	101 38 16	2979	103 08 55	2989	104 39 21	2998	106 09 36	3008
	MARS W.	58 59 14	2857	60 32 28	2866	62 05 30	2875	63 38 21	2883
	Spica W.	48 04 55	2973	49 35 41	2983	51 06 14	2992	52 36 36	3001
	α Aquilæ E.	53 37 58	3630	52 19 56	3668	51 02 35	3708	49 45 56	3750
	SATURN E.	56 19 34	3086	54 49 53	3037	53 20 26	3047	51 51 11	3056
	SUN E.	107 28 01	3338	106 04 34	3349	104 41 19	3359	103 18 16	3369
20	Regulus W.	113 38 07	3047	115 07 21	3054	116 36 26	3060	118 05 24	3065
	MARS W.	71 20 09	2918	72 52 05	2923	74 23 54	2928	75 55 37	2933
	Spica W.	60 05 53	3039	61 35 18	3045	63 04 35	3050	64 33 46	3056
	α Aquilæ E.	43 34 37	4007	42 23 04	4072	41 12 35	4141	40 03 13	4215
	SATURN E.	44 27 58	3104	42 59 53	3112	41 31 58	3120	40 04 13	3129
	SUN E.	96 25 36	3410	95 03 31	3417	93 41 34	3423	92 19 43	3430
21	MARS W.	83 32 53	2950	85 04 09	2952	86 35 22	2953	88 06 34	2954
	Spica W.	71 58 15	3074	73 26 56	3076	74 55 35	3078	76 24 12	3079
	Antares W.	27 30 39	3305	28 54 45	3286	30 19 13	3270	31 44 00	3256
	SATURN E.	32 47 53	3168	31 21 05	3176	29 54 27	3184	28 27 59	3193
	SUN E.	85 31 55	3449	84 10 34	3452	82 49 16	3454	81 28 00	3455
22	MARS W.	95 42 25	2953	97 13 37	2951	98 44 52	2949	100 16 09	2946
	Spica W.	83 47 02	3079	85 15 37	3077	86 44 15	3075	88 12 55	3072
	Antares W.	38 51 38	3200	40 17 47	3192	41 44 06	3183	43 10 36	3174
	SUN E.	74 41 52	3454	73 20 37	3452	71 59 20	3450	70 38 00	3447
23	MARS W.	107 53 35	2927	109 25 19	2922	110 57 10	2916	112 29 08	2911
	Spica W.	95 37 14	3053	97 06 21	3048	98 35 34	3043	100 04 54	3037
	Antares W.	50 25 36	3133	51 53 06	3124	53 20 46	3115	54 48 37	3106
	SUN E.	63 50 23	3426	62 28 36	3421	61 06 43	3415	59 44 43	3408
24	Spica W.	107 33 30	3002	109 03 40	2994	110 34 00	2985	112 04 31	2977
	Antares W.	62 10 33	3061	63 39 30	3051	65 08 39	3041	66 38 01	3031
	SUN E.	52 52 45	3370	51 29 54	3361	50 06 53	3351	48 43 41	3342
25	Antares W.	74 08 00	2978	75 38 40	2968	77 09 33	2957	78 40 40	2945
	SUN E.	41 44 52	3290	40 20 29	3279	38 55 54	3268	37 31 05	3256
26	Antares W.	86 19 53	2887	87 52 28	2876	89 25 17	2864	90 58 22	2853
	SUN E.	30 23 31	3196	28 57 17	3183	27 30 48	3171	26 04 04	3159
30	SUN W.	17 45 43	2816	19 19 50	2806	20 54 10	2797	22 28 42	2788
	Pollux E.	85 40 30	2580	84 01 08	2573	82 21 36	2565	80 41 52	2557
	Regulus E.	122 08 29	2502	120 27 18	2493	118 45 55	2484	117 04 19	2475
31	SUN W.	30 24 18	2746	31 59 57	2738	33 35 46	2731	35 11 45	2724
	Pollux E.	72 20 54	2528	70 40 19	2523	68 59 38	2519	67 18 51	2515
	Regulus E.	108 33 22	2436	106 50 38	2429	105 07 44	2422	103 24 40	2415

GREENWICH MEAN TIME.

LUMAR DISTANCES.

Day of the Month.	Name and Direction of Object.	Midnight.	P. L. of Diff.	XVh	P. L. of Diff.	XVIIIh	P. L. of Diff.	XXIh	P. L. of Diff.
		° ' "		° ' "		° ' "		° ' "	
18	SATURN E.	62 20 44	2978	60 50 04	2991	59 19 40	3003	57 49 30	3014
	SUN E.	113 04 04	3291	111 39 42	3304	110 15 35	3315	108 51 41	3327
19	Regulus W.	107 39 39	3017	109 09 31	3026	110 39 12	3033	112 08 44	3040
	MARS W.	65 11 02	2891	66 43 32	2898	68 15 53	2905	69 48 05	2912
	Spica W.	54 06 47	3010	55 36 47	3018	57 06 38	3025	58 36 20	3032
	α Aquilæ E.	48 30 02	3794	47 14 54	3843	46 00 36	3893	44 47 09	3947
	SATURN E.	50 22 08	3067	48 53 18	3077	47 24 40	3086	45 56 14	3095
	SUN E.	101 55 24	3378	100 32 43	3386	99 10 11	3395	97 47 49	3403
20	Regulus W.	119 34 16	3072	121 03 00	3077	122 31 38	3081	124 00 11	3084
	MARS W.	77 27 14	2938	78 58 45	2941	80 30 12	2944	82 01 34	2947
	Spica W.	66 02 50	3060	67 31 48	3065	69 00 41	3068	70 29 30	3071
	α Aquilæ E.	38 55 02	4298	37 48 08	4392	36 42 40	4493	35 38 42	4603
	SATURN E.	38 36 38	3137	37 09 13	3144	35 41 57	3152	34 14 50	3160
	SUN E.	90 57 59	3434	89 36 21	3438	88 14 48	3442	86 53 20	3446
21	MARS W.	89 37 45	2955	91 08 54	2954	92 40 04	2954	94 11 14	2954
	Spica W.	77 52 47	3080	79 21 21	3081	80 49 54	3080	82 18 28	3080
	Antares W.	33 09 03	3243	34 34 21	3231	35 59 54	3220	37 25 40	3210
	SATURN E.	27 01 42	3204	25 35 38	3216	24 09 47	3228	22 44 11	3241
	SUN E.	80 06 46	3456	78 45 33	3456	77 24 20	3455	76 03 06	3455
22	MARS W.	101 47 30	2943	103 18 54	2939	104 50 23	2935	106 21 56	2931
	Spica W.	89 41 39	3069	91 10 26	3066	92 39 17	3062	94 08 13	3058
	Antares W.	44 37 16	3166	46 04 06	3158	47 31 06	3149	48 58 16	3141
	SUN E.	69 16 37	3445	67 55 11	3440	66 33 40	3436	65 12 04	3431
23	MARS W.	114 01 13	2905	115 33 25	2898	117 05 46	2891	118 38 15	2884
	Spica W.	101 34 21	3031	103 03 55	3024	104 33 38	3017	106 03 29	3009
	Antares W.	56 16 39	3098	57 44 51	3090	59 13 13	3080	60 41 47	3070
	SUN E.	58 22 36	3401	57 00 21	3394	55 37 58	3386	54 15 26	3379
24	Spica W.	113 35 12	2969	115 06 04	2960	116 37 07	2950	118 08 23	2940
	Antares W.	68 07 35	3021	69 37 22	3011	71 07 21	3000	72 37 34	2989
	SUN E.	47 20 18	3332	45 56 44	3323	44 32 59	3312	43 09 02	3301
25	Antares W.	80 12 02	2934	81 43 38	2923	83 15 28	2911	84 47 33	2899
	SUN E.	36 06 02	3245	34 40 46	3232	33 15 15	3220	31 49 30	3209
26	Antares W.	92 31 41	2842	94 05 15	2830	95 39 04	2818	97 13 09	2805
	SUN E.	24 37 06	3146	23 09 52	3133	21 42 23	3121	20 14 39	3109
30	SUN W.	24 03 27	2779	25 38 23	2770	27 13 30	2761	28 48 49	2753
	Pollux E.	79 01 57	2550	77 21 53	2544	75 41 41	2538	74 01 21	2533
	Regulus E.	115 22 30	2467	113 40 30	2458	111 58 18	2450	110 15 55	2443
31	SUN W.	36 47 53	2717	38 24 10	2711	40 00 35	2704	41 37 10	2698
	Pollux E.	65 37 59	2512	63 57 03	2510	62 16 04	2508	60 35 02	2507
	Regulus E.	101 41 27	2409	99 58 05	2403	98 14 34	2397	96 30 55	2391

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S						Sidereal Time of Semi-diameter Passing Meridian.	Equation of Time, to be Added to		Diff. for 1 Hour.
		Apparent Right Ascension.	Diff. for 1 Hour.	Apparent Declination.	Diff. for 1 Hour.	Semi-diameter.	Subtracted from Apparent Time.				
Wed.	1	^h 0 ^m 38 ^s 56.39	^s +9.100	N. 4 11 41.1	["] +58.04	['] 16 ["] 01.98	^s 64.47	^m 4 ^s 14.92	^s 0.754		
Thur.	2	0 42 34.83	9.103	4 34 51.6	57.84	16 01.70	64.48	3 56.85	0.751		
Frid.	3	0 46 13.36	9.107	4 57 57.1	57.62	16 01.43	64.50	3 38.87	0.747		
Sat.	4	0 49 51.99	+9.112	5 20 57.2	+57.39	16 01.17	64.52	3 21.00	0.742		
SUN.	5	0 53 30.76	9.118	5 43 51.6	57.14	16 00.89	64.55	3 03.26	0.736		
Mon.	6	0 57 09.67	9.125	6 06 39.9	56.88	16 00.62	64.57	2 45.68	0.730		
Tues.	7	1 00 48.75	+9.133	6 29 21.8	+56.61	16 00.35	64.60	2 28.25	0.722		
Wed.	8	1 04 28.01	9.141	6 51 57.0	56.32	16 00.08	64.63	2 11.01	0.714		
Thur.	9	1 08 07.48	9.150	7 14 25.1	56.02	15 59.81	64.67	1 53.97	0.705		
Frid.	10	1 11 47.18	+9.160	7 36 45.9	+55.71	15 59.54	64.70	1 37.16	0.695		
Sat.	11	1 15 27.13	9.171	7 58 58.9	55.38	15 59.27	64.74	1 20.60	0.684		
SUN.	12	1 19 07.35	9.183	8 21 03.9	55.04	15 59.00	64.78	1 04.32	0.672		
Mon.	13	1 22 47.86	+9.195	8 43 00.5	+54.68	15 58.73	64.83	0 48.33	0.660		
Tues.	14	1 26 28.69	9.209	9 04 48.5	54.31	15 58.45	64.87	0 32.64	0.646		
Wed.	15	1 30 09.84	9.223	9 26 27.4	53.93	15 58.18	64.92	0 17.29	0.632		
Thur.	16	1 33 51.35	+9.238	9 47 57.1	+53.54	15 57.91	64.97	0 02.28	0.617		
Frid.	17	1 37 33.23	9.253	10 09 17.1	53.13	15 57.64	65.02	0 12.36	0.602		
Sat.	18	1 41 15.49	9.270	10 30 27.1	52.70	15 57.37	65.08	0 26.61	0.585		
SUN.	19	1 44 58.16	+9.287	10 51 26.8	+52.27	15 57.11	65.14	0 40.46	0.568		
Mon.	20	1 48 41.23	9.304	11 12 15.9	51.82	15 56.84	65.20	0 53.90	0.551		
Tues.	21	1 52 24.74	9.322	11 32 54.0	51.35	15 56.58	65.26	1 06.90	0.533		
Wed.	22	1 56 08.70	+9.341	11 53 20.8	+50.87	15 56.31	65.32	1 19.47	0.514		
Thur.	23	1 59 53.10	9.360	12 13 36.0	50.38	15 56.05	65.39	1 31.58	0.495		
Frid.	24	2 03 37.97	9.380	12 33 39.2	49.87	15 55.79	65.45	1 43.24	0.475		
Sat.	25	2 07 23.32	+9.400	12 53 30.1	+49.35	15 55.54	65.52	1 54.41	0.455		
SUN.	26	2 11 09.15	9.420	13 13 08.3	48.82	15 55.28	65.59	2 05.09	0.435		
Mon.	27	2 14 55.47	9.441	13 32 33.5	48.27	15 55.02	65.66	2 15.30	0.414		
Tues.	28	2 18 42.29	+9.461	13 51 45.4	+47.72	15 54.78	65.74	2 25.01	0.394		
Wed.	29	2 22 29.62	9.482	14 10 43.6	47.14	15 54.54	65.81	2 34.22	0.373		
Thur.	30	2 26 17.44	9.504	14 29 27.9	46.55	15 54.30	65.88	2 42.92	0.352		
Frid.	31	2 30 05.77	+9.526	N.14 47 57.7	+45.94	15 54.05	65.96	2 51.11	0.330		

NOTE.—The mean time of semidiameter passing the meridian may be found by subtracting 0.18^s from the sidereal time.

The sign + prefixed to the hourly change of declination indicates that north declinations are increasing.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S				Equation of Time, to be Subtracted from		Sideral Time, or Right Ascension of Mean Sun.
		Apparent Right Ascension.	Diff. for 1 Hour.	Apparent Declination.	Diff. for 1 Hour.	Added to Mean Time.	Diff. for 1 Hour.	
		h m s	s	° ' "	"	m s	s	h m s
Wed.	1	0 38 55.75	+9.102	N. 4 11 37.0	+58.05	4 14.97	+0.754	0 34 40.78
Thur.	2	0 42 34.23	9.105	4 34 47.8	57.85	3 56.90	0.751	0 38 37.33
Frid.	3	0 46 12.80	9.109	4 57 53.6	57.63	3 38.92	0.747	0 42 33.88
Sat.	4	0 49 51.48	+9.114	5 20 54.0	+57.40	3 21.04	+0.742	0 46 30.44
SUN.	5	0 53 30.29	9.120	5 43 48.7	57.15	3 03.30	0.736	0 50 26.99
Mon.	6	0 57 09.25	9.126	6 06 37.3	56.89	2 45.71	0.730	0 54 23.54
Tues.	7	1 00 48.37	+9.134	6 29 19.5	+56.62	2 28.28	+0.722	0 58 20.09
Wed.	8	1 04 27.68	9.142	6 51 55.0	56.33	2 11.04	0.714	1 02 16.64
Thur.	9	1 08 07.19	9.151	7 14 23.4	56.03	1 53.99	0.705	1 06 13.20
Frid.	10	1 11 46.93	+9.161	7 36 44.4	+55.72	1 37.18	+0.695	1 10 09.75
Sat.	11	1 15 26.92	9.172	7 58 57.6	55.39	1 20.62	0.684	1 14 06.30
SUN.	12	1 19 07.18	9.184	8 21 02.9	55.05	1 04.33	0.672	1 18 02.85
Mon.	13	1 22 47.74	+9.196	8 42 59.8	+54.69	0 48.34	+0.660	1 21 59.40
Tues.	14	1 26 28.60	9.210	9 04 48.0	54.32	0 32.64	0.646	1 25 55.96
Wed.	15	1 30 09.80	9.224	9 26 27.2	53.94	0 17.29	0.632	1 29 52.51
Thur.	16	1 33 51.34	+9.239	9 47 57.1	+53.55	0 02.28	+0.617	1 33 49.06
Frid.	17	1 37 33.26	9.254	10 09 17.3	53.14	0 12.36	0.602	1 37 45.62
Sat.	18	1 41 15.56	9.271	10 30 27.5	52.71	0 26.61	0.585	1 41 42.17
SUN.	19	1 44 58.26	+9.288	10 51 27.4	+52.28	0 40.46	+0.568	1 45 38.72
Mon.	20	1 48 41.37	9.305	11 12 16.7	51.83	0 53.91	0.551	1 49 35.28
Tues.	21	1 52 24.92	9.323	11 32 55.0	51.36	1 06.91	0.533	1 53 31.83
Wed.	22	1 56 08.90	+9.342	11 53 22.0	+50.88	1 19.48	+0.514	1 57 28.38
Thur.	23	1 59 53.34	9.361	12 13 37.3	50.39	1 31.59	0.495	2 01 24.93
Frid.	24	2 03 38.24	9.381	12 33 40.6	49.88	1 43.25	0.475	2 05 21.49
Sat.	25	2 07 23.62	+9.401	12 53 31.7	+49.36	1 54.42	+0.455	2 09 18.04
SUN.	26	2 11 09.48	9.421	13 13 10.0	48.83	2 05.11	0.435	2 13 14.59
Mon.	27	2 14 55.83	9.442	13 32 35.4	48.28	2 15.32	0.414	2 17 11.15
Tues.	28	2 18 42.67	+9.462	13 51 47.4	+47.72	2 25.03	+0.394	2 21 07.70
Wed.	29	2 22 30.02	9.483	14 10 45.7	47.14	2 34.24	0.373	2 25 04.26
Thur.	30	2 26 17.87	9.504	14 29 30.0	46.55	2 42.94	0.352	2 29 00.81
Frid.	31	2 30 06.23	+9.526	N. 14 47 59.9	+45.94	2 51.13	+0.330	2 32 57.36

NOTE.—The semidiameter for mean noon may be assumed the same as that for apparent noon.
The sign + prefixed to the hourly change of declination indicates that north declinations are increasing.

Diff. for 1 Hour,
+ 9.8565".
(Table III.)

AT GREENWICH MEAN NOON.								
Day of the Month.	Day of the Year.	THE SUN'S				Logarithm of the Radius Vector of the Earth.	Diff. for 1 Hour.	Mean Time of Sidereal Noon.
		TRUE LONGITUDE.		Diff. for 1 Hour.	LATITUDE.			
		λ	λ'					
1	91	10 35 42.2	35 25.1	+148.02	— 0.50	9.999 7876	+ 51.3	23 21 28.99
2	92	11 34 53.4	34 36.3	147.92	0.59	9.999 9106	51.2	23 17 33.09
3	93	12 34 02.4	33 45.2	147.83	0.66	0.000 0332	51.0	23 13 37.18
4	94	13 33 09.0	32 51.7	+147.73	— 0.69	0.000 1554	+ 50.9	23 09 41.27
5	95	14 32 13.2	31 55.9	147.63	0.69	0.000 2775	50.8	23 05 45.37
6	96	15 31 15.2	30 57.7	147.53	0.66	0.000 3994	50.8	23 01 49.46
7	97	16 30 14.7	29 57.2	+147.43	— 0.59	0.000 5214	+ 50.8	22 57 53.56
8	98	17 29 12.0	28 54.4	147.34	0.49	0.000 6435	50.9	22 53 57.65
9	99	18 28 07.1	27 49.4	147.25	0.38	0.000 7658	51.0	22 50 01.74
10	100	19 26 59.9	26 42.1	+147.16	— 0.25	0.000 8884	+ 51.1	22 46 05.84
11	101	20 25 50.7	25 32.8	147.07	— 0.11	0.001 0112	51.2	22 42 09.93
12	102	21 24 39.4	24 21.4	146.99	+ 0.04	0.001 1343	51.3	22 38 14.02
13	103	22 23 26.1	23 08.1	+146.91	+ 0.18	0.001 2575	+ 51.4	22 34 18.12
14	104	23 22 11.0	21 52.8	146.83	0.30	0.001 3809	51.4	22 30 22.21
15	105	24 20 54.0	20 35.7	146.75	0.40	0.001 5043	51.4	22 26 26.30
16	106	25 19 35.2	19 16.8	+146.68	+ 0.49	0.001 6276	+ 51.3	22 22 30.40
17	107	26 18 14.7	17 56.2	146.61	0.54	0.001 7506	51.2	22 18 34.49
18	108	27 16 52.4	16 33.9	146.54	0.56	0.001 8733	51.0	22 14 38.58
19	109	28 15 28.5	15 09.9	+146.47	+ 0.56	0.001 9956	+ 50.8	22 10 42.67
20	110	29 14 02.9	13 44.2	146.40	0.54	0.002 1172	50.5	22 06 46.77
21	111	30 12 35.6	12 16.8	146.33	0.48	0.002 2381	50.2	22 02 50.86
22	112	31 11 06.7	10 47.8	+146.26	+ 0.41	0.002 3582	+ 49.9	21 58 54.96
23	113	32 09 36.2	09 17.1	146.19	0.32	0.002 4772	49.4	21 54 59.05
24	114	33 08 03.9	07 44.8	146.12	0.20	0.002 5950	48.9	21 51 03.14
25	115	34 06 30.0	06 10.8	+146.05	+ 0.08	0.002 7116	+ 48.3	21 47 07.23
26	116	35 04 54.4	04 35.0	145.98	— 0.05	0.002 8268	47.7	21 43 11.32
27	117	36 03 17.0	02 57.5	145.90	0.18	0.002 9405	47.1	21 39 15.42
28	118	37 01 37.8	01 18.2	+145.83	— 0.29	0.003 0527	+ 46.4	21 35 19.51
29	119	37 59 56.7	59 37.0	145.75	0.39	0.003 1632	45.7	21 31 23.60
30	120	38 58 13.6	57 53.9	145.67	0.46	0.003 2722	45.1	21 27 27.70
31	121	39 56 28.6	56 08.7	+145.58	— 0.50	0.003 3797	+ 44.5	21 23 31.79
NOTE.—The longitudes in the column λ are referred to the true equinox of their own date, while those in the column λ' are referred to the mean equinox of the beginning of the Besselian fictitious year.								
								Diff. for 1 Hour, — 9.8296 ^s . (Table II.)

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month.	SEMIDIAMETER.		HORIZONTAL PARALLAX.				UPPER TRANSIT.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 Hour.	Midnight.	Diff. for 1 Hour.	Meridian of Greenwich.	Diff. for 1 Hour.	Noon.
	' "	' "	' "	"	' "	"	h m	m	d
1	15 59.0	16 01.6	58 33.7	+ 0.85	58 43.3	+ 0.74	3 00.7	+ 2.29	3.4
2	16 03.9	16 05.8	58 51.6	0.64	58 58.7	0.54	3 56.7	2.37	4.4
3	16 07.4	16 08.7	59 04.6	0.44	59 09.3	0.34	4 54.1	2.41	5.4
4	16 09.7	16 10.3	59 12.9	+ 0.25	59 15.3	+ 0.15	5 51.8	+ 2.40	6.4
5	16 10.7	16 10.7	59 16.6	+ 0.05	59 16.6	- 0.05	6 48.9	2.35	7.4
6	16 10.4	16 09.7	59 15.5	- 0.15	59 12.9	0.27	7 44.5	2.28	8.4
7	16 08.6	16 07.1	59 09.0	- 0.39	59 03.6	- 0.52	8 38.5	+ 2.21	9.4
8	16 05.2	16 02.9	58 56.6	0.65	58 48.0	0.78	9 30.8	2.15	10.4
9	16 00.1	15 56.9	58 37.7	0.92	58 25.8	1.05	10 21.7	2.10	11.4
10	15 53.2	15 49.1	58 12.4	- 1.18	57 57.5	- 1.29	11 11.8	+ 2.07	12.4
11	15 44.7	15 40.0	57 41.3	1.39	57 24.1	1.47	12 01.3	2.06	13.4
12	15 35.1	15 30.0	57 06.0	1.53	56 47.4	1.56	12 50.7	2.06	14.4
13	15 24.9	15 19.8	56 28.6	- 1.56	56 09.9	- 1.54	13 40.2	+ 2.06	15.4
14	15 14.9	15 10.1	55 51.7	1.49	55 34.2	1.41	14 29.6	2.05	16.4
15	15 05.6	15 01.5	55 17.7	1.31	55 02.7	1.18	15 18.7	2.04	17.4
16	14 57.8	14 54.7	54 49.3	- 1.04	54 37.7	- 0.86	16 07.3	+ 2.01	18.4
17	14 52.1	14 50.2	54 28.2	0.69	54 21.0	0.50	16 55.2	1.97	19.4
18	14 48.9	14 48.2	54 16.3	- 0.29	54 14.0	- 0.08	17 42.1	1.93	20.4
19	14 48.3	14 49.1	54 14.3	+ 0.13	54 17.2	+ 0.35	18 28.0	+ 1.90	21.4
20	14 50.6	14 52.8	54 22.8	0.57	54 30.8	0.78	19 13.3	1.88	22.4
21	14 55.7	14 59.2	54 41.5	0.98	54 54.4	1.17	19 58.2	1.87	23.4
22	15 03.4	15 08.0	55 09.5	+ 1.34	55 26.6	+ 1.49	20 43.2	+ 1.89	24.4
23	15 13.1	15 18.6	55 45.4	1.62	56 05.6	1.74	21 28.9	1.93	25.4
24	15 24.4	15 30.4	56 26.8	1.80	56 48.7	1.83	22 16.0	2.00	26.4
25	15 36.5	15 42.5	57 10.9	+ 1.84	57 33.0	+ 1.81	23 05.2	+ 2.10	27.4
26	15 48.3	15 53.8	57 54.3	1.74	58 14.7	1.63	23 56.8	2.21	28.4
27	15 59.0	16 03.6	58 33.6	1.50	58 50.7	1.33	0		29.4
28	16 07.7	16 11.1	59 05.6	+ 1.15	59 18.2	+ 0.94	0 51.2	+ 2.32	0.9
29	16 13.9	16 15.9	59 28.2	0.73	59 35.6	0.51	1 48.2	2.41	1.9
30	16 17.2	16 17.8	59 40.4	+ 0.29	59 42.7	+ 0.09	2 46.8	2.46	2.9
31	16 17.8	16 17.1	59 42.5	- 0.09	59 40.1	- 0.28	3 46.0	+ 2.45	3.9

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
WEDNESDAY 1.					FRIDAY 3.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
1	3 28 42.26	+ 2.3663	N. 15 33 56.4	+ 6.014	1	5 25 19.27	+ 2.4733	N. 18 22 37.3	+ 0.793
2	3 31 04.34	2.3696	15 39 54.5	5.922	2	5 27 47.69	2.4741	18 23 21.3	0.673
3	3 33 26.61	2.3728	15 45 47.0	5.828	3	5 30 16.16	2.4749	18 23 58.1	0.553
4	3 35 49.08	2.3760	15 51 33.8	5.733	4	5 32 44.68	2.4756	18 24 27.7	0.433
5	3 38 11.73	2.3792	15 57 15.0	5.638	5	5 35 13.23	2.4762	18 24 50.1	0.313
6	3 40 34.58	2.3823	16 02 50.4	5.542	6	5 37 41.82	2.4768	18 25 05.2	0.193
7	3 42 57.61	2.3854	16 08 20.0	5.445	7	5 40 10.44	2.4773	18 25 13.2	+ 0.073
8	3 45 20.83	2.3885	16 13 43.8	5.347	8	5 42 39.09	2.4778	18 25 13.9	- 0.048
9	3 47 44.23	2.3915	16 19 01.7	5.248	9	5 45 07.77	2.4782	18 25 07.4	0.169
10	3 50 07.81	2.3945	16 24 13.6	5.148	10	5 47 36.47	2.4784	18 24 53.6	0.290
11	3 52 31.57	2.3974	16 29 19.5	5.048	11	5 50 05.18	2.4787	18 24 32.6	0.410
12	3 54 55.50	2.4003	16 34 19.4	4.948	12	5 52 33.91	2.4789	18 24 04.4	0.530
13	3 57 19.61	2.4033	16 39 13.2	4.846	13	5 55 02.65	2.4790	18 23 29.0	0.651
14	3 59 43.90	2.4062	16 44 00.9	4.743	14	5 57 31.39	2.4790	18 22 46.3	0.772
15	4 02 08.35	2.4089	16 48 42.4	4.640	15	6 00 00.13	2.4790	18 21 56.4	0.892
16	4 04 32.97	2.4117	16 53 17.7	4.536	16	6 02 28.87	2.4789	18 20 59.3	1.013
17	4 06 57.75	2.4144	16 57 46.7	4.431	17	6 04 57.60	2.4788	18 19 54.9	1.133
18	4 09 22.70	2.4171	17 02 09.4	4.326	18	6 07 26.32	2.4786	18 18 43.4	1.253
19	4 11 47.80	2.4197	17 06 25.8	4.220	19	6 09 55.03	2.4783	18 17 24.6	1.373
20	4 14 13.06	2.4223	17 10 35.8	4.113	20	6 12 23.72	2.4779	18 15 58.6	1.493
21	4 16 38.47	2.4248	17 14 39.4	4.007	21	6 14 52.38	2.4775	18 14 25.4	1.613
22	4 19 04.03	2.4273	17 18 36.6	3.898	22	6 17 21.02	2.4771	18 12 45.1	1.732
23	4 21 29.74	2.4297	17 22 27.2	3.789	23	6 19 49.63	2.4766	18 10 57.6	1.852
24	4 23 55.59	+ 2.4320	N. 17 26 11.3	+ 3.680	24	6 22 18.21	+ 2.4760	N. 18 09 02.9	- 1.971
THURSDAY 2.					SATURDAY 4.				
0	4 26 21.58	+ 2.4343	N. 17 29 48.8	+ 3.570	0	6 24 46.75	+ 2.4753	N. 18 07 01.1	- 2.089
1	4 28 47.71	2.4367	17 33 19.7	3.459	1	6 27 15.25	2.4746	18 04 52.2	2.208
2	4 31 13.98	2.4390	17 36 43.9	3.348	2	6 29 43.70	2.4738	18 02 36.1	2.327
3	4 33 40.39	2.4412	17 40 01.5	3.237	3	6 32 12.11	2.4730	18 00 13.0	2.444
4	4 36 06.92	2.4432	17 43 12.4	3.125	4	6 34 40.46	2.4721	17 57 42.8	2.563
5	4 38 33.57	2.4453	17 46 16.5	3.012	5	6 37 08.76	2.4712	17 55 05.5	2.680
6	4 41 00.35	2.4473	17 49 13.8	2.898	6	6 39 37.00	2.4701	17 52 21.2	2.797
7	4 43 27.25	2.4493	17 52 04.3	2.785	7	6 42 05.17	2.4690	17 49 29.9	2.913
8	4 45 54.26	2.4512	17 54 48.0	2.671	8	6 44 33.28	2.4679	17 46 31.6	3.030
9	4 48 21.39	2.4530	17 57 24.8	2.556	9	6 47 01.32	2.4668	17 43 26.3	3.146
10	4 50 48.62	2.4548	17 59 54.7	2.441	10	6 49 29.29	2.4655	17 40 14.1	3.262
11	4 53 15.96	2.4565	18 02 17.7	2.326	11	6 51 57.18	2.4642	17 36 54.9	3.377
12	4 55 43.40	2.4582	18 04 33.8	2.210	12	6 54 24.99	2.4628	17 33 28.9	3.491
13	4 58 10.94	2.4598	18 06 42.9	2.093	13	6 56 52.72	2.4614	17 29 56.0	3.606
14	5 00 38.57	2.4613	18 08 45.0	1.977	14	6 59 20.36	2.4600	17 26 16.2	3.720
15	5 03 06.29	2.4628	18 10 40.1	1.860	15	7 01 47.92	2.4585	17 22 29.6	3.833
16	5 05 34.10	2.4643	18 12 28.2	1.743	16	7 04 15.38	2.4569	17 18 36.3	3.945
17	5 08 02.00	2.4656	18 14 09.2	1.624	17	7 06 42.75	2.4553	17 14 36.2	4.058
18	5 10 29.97	2.4668	18 15 43.1	1.507	18	7 09 10.02	2.4537	17 10 29.4	4.169
19	5 12 58.02	2.4681	18 17 10.0	1.388	19	7 11 37.19	2.4519	17 06 15.9	4.280
20	5 15 26.14	2.4692	18 18 29.7	1.269	20	7 14 04.25	2.4502	17 01 55.8	4.391
21	5 17 54.33	2.4703	18 19 42.3	1.151	21	7 16 31.21	2.4484	16 57 29.0	4.502
22	5 20 22.58	2.4714	18 20 47.8	1.032	22	7 18 58.06	2.4466	16 52 55.6	4.611
23	5 22 50.90	2.4724	18 21 46.1	0.913	23	7 21 24.80	2.4447	16 48 15.7	4.719
24	5 25 19.27	+ 2.4733	N. 18 22 37.3	+ 0.793	24	7 23 51.42	+ 2.4428	N. 16 43 29.3	- 4.828

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
SUNDAY 5.					TUESDAY 7.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
0	7 23 51.42	+ 2.4428	N. 16 43 29.3	- 4.828	0	9 18 19.79	+ 2.3207	N. 11 01 57.3	- 9.056
1	7 26 17.93	2.4408	16 38 36.4	4.935	1	9 20 38.95	2.3180	10 52 52.0	9.120
2	7 28 44.32	2.4388	16 33 37.1	5.042	2	9 22 57.95	2.3153	10 43 42.9	9.183
3	7 31 10.59	2.4368	16 28 31.4	5.148	3	9 25 16.78	2.3125	10 34 30.1	9.244
4	7 33 36.73	2.4347	16 23 19.3	5.254	4	9 27 35.45	2.3098	10 25 13.6	9.306
5	7 36 02.75	2.4326	16 18 00.9	5.358	5	9 29 53.96	2.3071	10 15 53.4	9.366
6	7 38 28.64	2.4304	16 12 36.3	5.463	6	9 32 12.30	2.3044	10 06 29.7	9.425
7	7 40 54.40	2.4282	16 07 05.4	5.567	7	9 34 30.49	2.3018	9 57 02.4	9.483
8	7 43 20.02	2.4259	16 01 28.3	5.669	8	9 36 48.52	2.2992	9 47 31.7	9.539
9	7 45 45.51	2.4237	15 55 45.1	5.771	9	9 39 06.39	2.2965	9 37 57.7	9.595
10	7 48 10.86	2.4213	15 49 55.8	5.873	10	9 41 24.10	2.2938	9 28 20.3	9.650
11	7 50 36.07	2.4190	15 44 00.4	5.973	11	9 43 41.65	2.2912	9 18 39.7	9.703
12	7 53 01.14	2.4167	15 37 59.1	6.072	12	9 45 59.04	2.2886	9 08 56.0	9.755
13	7 55 26.07	2.4143	15 31 51.8	6.171	13	9 48 16.28	2.2860	8 59 09.1	9.807
14	7 57 50.86	2.4119	15 25 38.6	6.269	14	9 50 33.36	2.2834	8 49 19.2	9.856
15	8 00 15.50	2.4094	15 19 19.5	6.367	15	9 52 50.29	2.2809	8 39 26.4	9.904
16	8 02 39.99	2.4070	15 12 54.6	6.463	16	9 55 07.07	2.2783	8 29 30.7	9.953
17	8 05 04.34	2.4045	15 06 24.0	6.558	17	9 57 23.69	2.2758	8 19 32.1	9.999
18	8 07 28.53	2.4019	14 59 47.7	6.653	18	9 59 40.17	2.2733	8 09 30.8	10.045
19	8 09 52.57	2.3994	14 53 05.7	6.747	19	10 01 56.49	2.2708	7 59 26.7	10.090
20	8 12 16.46	2.3969	14 46 18.1	6.840	20	10 04 12.67	2.2684	7 49 20.0	10.133
21	8 14 40.20	2.3943	14 39 24.9	6.932	21	10 06 28.70	2.2660	7 39 10.8	10.174
22	8 17 03.78	2.3917	14 32 26.3	7.023	22	10 08 44.59	2.2636	7 28 59.1	10.216
23	8 19 27.20	+ 2.3890	N. 14 25 22.2	- 7.113	23	10 11 00.33	+ 2.2612	N. 7 18 44.9	- 10.256
MONDAY 6.					WEDNESDAY 8.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
0	8 21 50.46	+ 2.3864	N. 14 18 12.7	- 7.203	0	10 13 15.93	+ 2.2588	N. 7 08 28.4	- 10.294
1	8 24 13.57	2.3838	14 10 57.9	7.291	1	10 15 31.39	2.2565	6 58 09.6	10.332
2	8 26 36.51	2.3811	14 03 37.8	7.379	2	10 17 46.71	2.2542	6 47 48.6	10.368
3	8 28 59.30	2.3784	13 56 12.4	7.466	3	10 20 01.89	2.2518	6 37 25.4	10.403
4	8 31 21.92	2.3757	13 48 41.9	7.551	4	10 22 16.93	2.2496	6 27 00.2	10.438
5	8 33 44.38	2.3730	13 41 06.3	7.635	5	10 24 31.84	2.2473	6 16 32.9	10.471
6	8 36 06.68	2.3703	13 33 25.7	7.719	6	10 26 46.61	2.2451	6 06 03.7	10.503
7	8 38 28.81	2.3675	13 25 40.0	7.802	7	10 29 01.25	2.2429	5 55 32.6	10.534
8	8 40 50.78	2.3648	13 17 49.4	7.884	8	10 31 15.76	2.2408	5 44 59.6	10.564
9	8 43 12.59	2.3621	13 09 53.9	7.965	9	10 33 30.15	2.2387	5 34 24.9	10.593
10	8 45 34.23	2.3593	13 01 53.6	8.044	10	10 35 44.40	2.2364	5 23 48.5	10.620
11	8 47 55.70	2.3565	12 53 48.6	8.123	11	10 37 58.52	2.2343	5 13 10.5	10.646
12	8 50 17.01	2.3538	12 45 38.9	8.201	12	10 40 12.52	2.2323	5 02 31.0	10.671
13	8 52 38.15	2.3510	12 37 24.5	8.278	13	10 42 26.40	2.2303	4 51 50.0	10.695
14	8 54 59.13	2.3483	12 29 05.5	8.354	14	10 44 40.15	2.2283	4 41 07.6	10.718
15	8 57 19.94	2.3455	12 20 42.0	8.429	15	10 46 53.79	2.2263	4 30 23.8	10.740
16	8 59 40.59	2.3428	12 12 14.0	8.503	16	10 49 07.31	2.2243	4 19 38.8	10.760
17	9 02 01.07	2.3400	12 03 41.7	8.575	17	10 51 20.71	2.2223	4 08 52.6	10.780
18	9 04 21.39	2.3373	11 55 05.0	8.647	18	10 53 33.99	2.2204	3 58 05.2	10.798
19	9 06 41.54	2.3344	11 46 24.0	8.718	19	10 55 47.16	2.2186	3 47 16.8	10.815
20	9 09 01.52	2.3317	11 37 38.8	8.788	20	10 58 00.22	2.2168	3 36 27.4	10.832
21	9 11 21.34	2.3289	11 28 49.5	8.856	21	11 00 13.17	2.2150	3 25 37.0	10.847
22	9 13 40.99	2.3261	11 19 56.1	8.923	22	11 02 26.02	2.2132	3 14 45.8	10.861
23	9 16 00.47	2.3233	11 10 58.7	8.990	23	11 04 38.75	2.2113	3 03 53.7	10.874
24	9 18 19.79	+ 2.3207	N. 11 01 57.3	- 9.056	24	11 06 51.38	+ 2.2097	N. 2 53 00.9	- 10.886

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
THURSDAY 9.					SATURDAY 11.				
0	11 06 51.38	+ 2.2097	N. 2 53 00.9	-10.886	0	12 51 28.53	+ 2.1600	S. 5 42 23.1	-10.194
1	11 09 03.91	2.2079	2 42 07.4	10.896	1	12 53 38.12	2.1596	5 52 33.6	10.156
2	11 11 16.33	2.2063	2 31 13.4	10.904	2	12 55 47.68	2.1592	6 02 41.8	10.116
3	11 13 28.66	2.2047	2 20 18.9	10.913	3	12 57 57.22	2.1587	6 12 47.5	10.075
4	11 15 40.89	2.2030	2 09 23.9	10.921	4	13 00 06.73	2.1584	6 22 50.8	10.034
5	11 17 53.02	2.2014	1 58 28.4	10.927	5	13 02 16.23	2.1581	6 32 51.6	9.992
6	11 20 05.06	2.1998	1 47 32.6	10.932	6	13 04 25.70	2.1578	6 42 49.8	9.948
7	11 22 17.00	2.1983	1 36 36.6	10.935	7	13 06 35.16	2.1575	6 52 45.4	9.905
8	11 24 28.86	2.1969	1 25 40.4	10.938	8	13 08 44.60	2.1572	7 02 38.4	9.860
9	11 26 40.63	2.1953	1 14 44.0	10.940	9	13 10 54.02	2.1569	7 12 28.6	9.814
10	11 28 52.31	2.1939	1 03 47.6	10.940	10	13 13 03.43	2.1567	7 22 16.1	9.767
11	11 31 03.90	2.1926	0 52 51.2	10.940	11	13 15 12.82	2.1564	7 32 00.7	9.719
12	11 33 15.42	2.1913	0 41 54.8	10.938	12	13 17 22.20	2.1562	7 41 42.4	9.672
13	11 35 26.85	2.1898	0 30 58.6	10.936	13	13 19 31.57	2.1560	7 51 21.3	9.623
14	11 37 38.20	2.1885	0 20 02.5	10.933	14	13 21 40.92	2.1558	8 00 57.2	9.573
15	11 39 49.47	2.1872	N. 0 09 06.7	10.928	15	13 23 50.27	2.1557	8 10 30.0	9.522
16	11 42 00.66	2.1859	S. 0 01 48.8	10.922	16	13 25 59.60	2.1555	8 19 59.8	9.471
17	11 44 11.78	2.1848	0 12 43.9	10.914	17	13 28 08.93	2.1554	8 29 26.5	9.419
18	11 46 22.83	2.1836	0 23 38.5	10.906	18	13 30 18.25	2.1553	8 38 50.1	9.366
19	11 48 33.81	2.1824	0 34 32.6	10.898	19	13 32 27.56	2.1552	8 48 10.4	9.312
20	11 50 44.72	2.1813	0 45 26.2	10.888	20	13 34 36.87	2.1551	8 57 27.5	9.258
21	11 52 55.56	2.1801	0 56 19.1	10.876	21	13 36 46.17	2.1549	9 06 41.3	9.202
22	11 55 06.33	2.1790	1 07 11.3	10.864	22	13 38 55.46	2.1548	9 15 51.7	9.145
23	11 57 17.04	+ 2.1780	S. 1 18 02.8	-10.851	23	13 41 04.74	+ 2.1547	S. 9 24 58.7	-9.088
FRIDAY 10.					SUNDAY 12.				
0	11 59 27.69	+ 2.1770	S. 1 28 53.4	-10.836	0	13 43 14.02	+ 2.1547	S. 9 34 02.3	-9.031
1	12 01 38.28	2.1759	1 39 43.1	10.821	1	13 45 23.30	2.1547	9 43 02.4	8.973
2	12 03 48.80	2.1749	1 50 31.9	10.805	2	13 47 32.58	2.1547	9 51 59.0	8.914
3	12 05 59.27	2.1740	2 01 19.7	10.788	3	13 49 41.86	2.1546	10 00 52.1	8.854
4	12 08 09.68	2.1731	2 12 06.4	10.769	4	13 51 51.13	2.1546	10 09 41.5	8.793
5	12 10 20.04	2.1723	2 22 52.0	10.750	5	13 54 00.41	2.1546	10 18 27.3	8.733
6	12 12 30.35	2.1713	2 33 36.4	10.730	6	13 56 09.68	2.1546	10 27 09.4	8.671
7	12 14 40.60	2.1705	2 44 19.6	10.708	7	13 58 18.96	2.1546	10 35 47.8	8.608
8	12 16 50.81	2.1697	2 55 01.4	10.685	8	14 00 28.23	2.1545	10 44 22.4	8.544
9	12 19 00.96	2.1688	3 05 41.8	10.662	9	14 02 37.50	2.1545	10 52 53.1	8.480
10	12 21 11.07	2.1681	3 16 20.8	10.638	10	14 04 46.77	2.1546	11 01 20.0	8.416
11	12 23 21.13	2.1673	3 26 58.3	10.612	11	14 06 56.05	2.1547	11 09 43.0	8.351
12	12 25 31.15	2.1667	3 37 34.2	10.585	12	14 09 05.33	2.1547	11 18 02.1	8.285
13	12 27 41.13	2.1659	3 48 08.5	10.558	13	14 11 14.61	2.1547	11 26 17.2	8.218
14	12 29 51.06	2.1653	3 58 41.2	10.530	14	14 13 23.89	2.1547	11 34 28.3	8.152
15	12 32 00.96	2.1647	4 09 12.1	10.500	15	14 15 33.17	2.1548	11 42 35.4	8.084
16	12 34 10.82	2.1641	4 19 41.2	10.470	16	14 17 42.46	2.1548	11 50 38.4	8.015
17	12 36 20.65	2.1635	4 30 08.5	10.439	17	14 19 51.75	2.1548	11 58 37.2	7.946
18	12 38 30.44	2.1628	4 40 33.9	10.407	18	14 22 01.04	2.1548	12 06 31.9	7.877
19	12 40 40.19	2.1623	4 50 57.3	10.373	19	14 24 10.33	2.1548	12 14 22.4	7.807
20	12 42 49.92	2.1618	5 01 18.7	10.340	20	14 26 19.62	2.1549	12 22 08.7	7.736
21	12 44 59.61	2.1613	5 11 38.1	10.305	21	14 28 28.92	2.1550	12 29 50.7	7.664
22	12 47 09.28	2.1609	5 21 55.3	10.268	22	14 30 38.22	2.1551	12 37 28.4	7.593
23	12 49 18.92	2.1604	5 32 10.3	10.232	23	14 32 47.53	2.1552	12 45 01.8	7.521
24	12 51 28.53	+ 2.1600	S. 5 42 23.1	-10.194	24	14 34 56.84	+ 2.1552	S. 12 52 30.9	-7.448

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
MONDAY 13.					WEDNESDAY 15.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
0	14 34 56.84	+ 2.1552	S. 12 52 30.9	-7.448	0	16 18 17.77	+ 2.1464	S. 17 17 46.4	-3.483
1	14 37 06.15	2.1552	12 59 55.6	7.374	1	16 20 26.54	2.1459	17 21 12.7	3.393
2	14 39 15.46	2.1552	13 07 15.8	7.299	2	16 22 35.28	2.1453	17 24 33.6	3.304
3	14 41 24.77	2.1552	13 14 31.5	7.225	3	16 24 43.98	2.1448	17 27 49.2	3.216
4	14 43 34.08	2.1553	13 21 42.8	7.150	4	16 26 52.65	2.1442	17 30 59.5	3.128
5	14 45 43.40	2.1553	13 28 49.5	7.074	5	16 29 01.28	2.1436	17 34 04.5	3.038
6	14 47 52.71	2.1553	13 35 51.7	6.999	6	16 31 09.88	2.1430	17 37 04.1	2.949
7	14 50 02.03	2.1553	13 42 49.4	6.923	7	16 33 18.44	2.1423	17 39 58.4	2.860
8	14 52 11.35	2.1553	13 49 42.4	6.845	8	16 35 26.95	2.1416	17 42 47.3	2.771
9	14 54 20.66	2.1553	13 56 30.8	6.768	9	16 37 35.43	2.1410	17 45 30.9	2.682
10	14 56 29.98	2.1553	14 03 14.5	6.689	10	16 39 43.87	2.1403	17 48 09.1	2.593
11	14 58 39.30	2.1553	14 09 53.5	6.611	11	16 41 52.26	2.1395	17 50 42.0	2.503
12	15 00 48.61	2.1553	14 16 27.8	6.533	12	16 44 00.61	2.1388	17 53 09.5	2.413
13	15 02 57.93	2.1553	14 22 57.4	6.453	13	16 46 08.91	2.1380	17 55 31.6	2.324
14	15 05 07.24	2.1554	14 29 22.2	6.373	14	16 48 17.17	2.1373	17 57 48.4	2.235
15	15 07 16.55	2.1552	14 35 42.2	6.293	15	16 50 25.38	2.1364	17 59 59.8	2.145
16	15 09 25.86	2.1551	14 41 57.4	6.213	16	16 52 33.54	2.1356	18 02 05.8	2.056
17	15 11 35.16	2.1550	14 48 07.8	6.133	17	16 54 41.65	2.1348	18 04 06.5	1.967
18	15 13 44.46	2.1549	14 54 13.3	6.051	18	16 56 49.71	2.1339	18 06 01.8	1.877
19	15 15 53.75	2.1548	15 00 13.9	5.970	19	16 58 57.72	2.1330	18 07 51.7	1.788
20	15 18 03.04	2.1547	15 06 09.7	5.888	20	17 01 05.67	2.1321	18 09 36.3	1.698
21	15 20 12.32	2.1547	15 12 00.5	5.806	21	17 03 13.57	2.1312	18 11 15.5	1.608
22	15 22 21.60	2.1546	15 17 46.4	5.723	22	17 05 21.41	2.1303	18 12 49.3	1.519
23	15 24 30.87	+ 2.1544	S. 15 23 27.3	-5.640	23	17 07 29.20	+ 2.1293	S. 18 14 17.8	-1.430
TUESDAY 14.					THURSDAY 16.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
0	15 26 40.13	+ 2.1543	S. 15 29 03.2	-5.557	0	17 09 36.93	+ 2.1283	S. 18 15 40.9	-1.341
1	15 28 49.38	2.1542	15 34 34.1	5.473	1	17 11 44.60	2.1273	18 16 58.7	1.253
2	15 30 58.63	2.1540	15 40 00.0	5.389	2	17 13 52.21	2.1263	18 18 11.2	1.163
3	15 33 07.86	2.1538	15 45 20.8	5.305	3	17 15 59.76	2.1253	18 19 18.3	1.074
4	15 35 17.08	2.1536	15 50 36.6	5.221	4	17 18 07.25	2.1243	18 20 20.1	0.985
5	15 37 26.29	2.1534	15 55 47.3	5.136	5	17 20 14.68	2.1233	18 21 16.5	0.896
6	15 39 35.49	2.1532	16 00 52.9	5.051	6	17 22 22.04	2.1222	18 22 07.6	0.808
7	15 41 44.67	2.1529	16 05 53.4	4.966	7	17 24 29.34	2.1211	18 22 53.4	0.719
8	15 43 53.84	2.1527	16 10 48.8	4.880	8	17 26 36.57	2.1199	18 23 33.9	0.631
9	15 46 02.99	2.1524	16 15 39.0	4.794	9	17 28 43.73	2.1188	18 24 09.1	0.543
10	15 48 12.13	2.1522	16 20 24.1	4.708	10	17 30 50.83	2.1177	18 24 39.0	0.454
11	15 50 21.25	2.1518	16 25 04.0	4.622	11	17 32 57.85	2.1164	18 25 03.6	0.366
12	15 52 30.35	2.1515	16 29 38.7	4.535	12	17 35 04.80	2.1153	18 25 22.9	0.278
13	15 54 39.43	2.1512	16 34 08.2	4.448	13	17 37 11.69	2.1142	18 25 36.9	0.189
14	15 56 48.49	2.1508	16 38 32.5	4.362	14	17 39 18.50	2.1129	18 25 45.6	0.102
15	15 58 57.53	2.1505	16 42 51.6	4.274	15	17 41 25.24	2.1117	18 25 49.1	-0.015
16	16 01 06.55	2.1502	16 47 05.4	4.187	16	17 43 31.90	2.1104	18 25 47.4	+ 0.073
17	16 03 15.55	2.1498	16 51 14.0	4.100	17	17 45 38.49	2.1093	18 25 40.4	0.160
18	16 05 24.52	2.1493	16 55 17.4	4.012	18	17 47 45.01	2.1080	18 25 28.2	0.248
19	16 07 33.46	2.1488	16 59 15.4	3.923	19	17 49 51.45	2.1067	18 25 10.7	0.334
20	16 09 42.38	2.1484	17 03 08.2	3.836	20	17 51 57.81	2.1054	18 24 48.1	0.421
21	16 11 51.27	2.1480	17 06 55.7	3.748	21	17 54 04.10	2.1042	18 24 20.2	0.508
22	16 14 00.14	2.1475	17 10 37.9	3.659	22	17 56 10.31	2.1028	18 23 47.2	0.593
23	16 16 08.97	2.1469	17 14 14.8	3.571	23	17 58 16.44	2.1014	18 23 09.0	0.680
24	16 18 17.77	+ 2.1464	S. 17 17 46.4	-3.483	24	18 00 22.48	+ 2.1001	S. 18 22 25.6	+ 0.766

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
FRIDAY 17.					SUNDAY 19.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
1	18 00 22.48	+ 2.1001	S. 18 22 25.6	+ 0.766	1	19 39 29.55	+ 2.0291	S. 16 11 09.2	+ 4.594
2	18 02 28.45	2.0988	18 21 37.1	0.852	2	19 41 31.25	2.0277	16 06 31.4	4.667
3	18 04 34.33	2.0973	18 20 43.4	0.938	3	19 43 32.87	2.0263	16 01 49.2	4.739
4	18 06 40.13	2.0960	18 19 44.6	1.023	4	19 45 34.40	2.0248	15 57 02.7	4.811
5	18 08 45.85	2.0947	18 18 40.6	1.109	5	19 47 35.85	2.0235	15 52 11.9	4.882
6	18 10 51.48	2.0932	18 17 31.5	1.193	6	19 49 37.22	2.0221	15 47 16.9	4.953
7	18 12 57.03	2.0918	18 16 17.4	1.278	7	19 51 38.50	2.0207	15 42 17.6	5.023
8	18 15 02.50	2.0904	18 14 58.2	1.363	8	19 53 39.70	2.0193	15 37 14.1	5.093
9	18 17 07.88	2.0889	18 13 33.9	1.447	9	19 55 40.82	2.0180	15 32 06.4	5.163
10	18 19 13.17	2.0875	18 12 04.6	1.531	10	19 57 41.86	2.0167	15 26 54.5	5.233
11	18 21 18.38	2.0861	18 10 30.2	1.615	11	19 59 42.82	2.0153	15 21 38.5	5.302
12	18 23 23.50	2.0847	18 08 50.8	1.698	12	20 01 43.70	2.0141	15 16 18.3	5.371
13	18 25 28.54	2.0833	18 07 06.5	1.781	13	20 03 44.51	2.0128	15 10 54.0	5.439
14	18 27 33.49	2.0817	18 05 17.1	1.865	14	20 05 45.23	2.0114	15 05 25.6	5.508
15	18 29 38.34	2.0802	18 03 22.7	1.948	15	20 07 45.88	2.0102	14 59 53.1	5.575
16	18 31 43.11	2.0788	18 01 23.3	2.031	16	20 09 46.46	2.0090	14 54 16.6	5.642
17	18 33 47.79	2.0773	17 59 19.0	2.113	17	20 11 46.96	2.0077	14 48 36.1	5.709
18	18 35 52.38	2.0757	17 57 09.8	2.194	18	20 13 47.38	2.0065	14 42 51.5	5.776
19	18 37 56.87	2.0742	17 54 55.7	2.277	19	20 15 47.74	2.0053	14 37 03.0	5.842
20	18 40 01.28	2.0728	17 52 36.6	2.358	20	20 17 48.02	2.0041	14 31 10.5	5.908
21	18 42 05.60	2.0713	17 50 12.7	2.439	21	20 19 48.23	2.0029	14 25 14.1	5.973
22	18 44 09.83	2.0698	17 47 43.9	2.521	22	20 21 48.37	2.0018	14 19 13.8	6.038
23	18 46 13.97	2.0683	17 45 10.2	2.602	23	20 23 48.45	2.0008	14 13 09.6	6.103
24	18 48 18.02	+ 2.0667	S. 17 42 31.7	+ 2.682	24	20 25 48.46	+ 1.9996	S. 14 07 01.5	+ 6.167
SATURDAY 18.					MONDAY 20.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
1	18 50 21.97	+ 2.0651	S. 17 39 48.4	+ 2.762	1	20 27 48.40	+ 1.9985	S. 14 00 49.6	+ 6.231
2	18 52 25.83	2.0636	17 37 00.3	2.843	2	20 29 48.28	1.9974	13 54 33.8	6.295
3	18 54 29.60	2.0621	17 34 07.3	2.923	3	20 31 48.09	1.9964	13 48 14.2	6.358
4	18 56 33.28	2.0606	17 31 09.6	3.001	4	20 33 47.85	1.9954	13 41 50.9	6.420
5	18 58 36.87	2.0590	17 28 07.2	3.080	5	20 35 47.54	1.9943	13 35 23.8	6.483
6	19 00 40.36	2.0575	17 25 00.0	3.159	6	20 37 47.17	1.9934	13 28 53.0	6.544
7	19 02 43.77	2.0560	17 21 48.1	3.238	7	20 39 46.75	1.9925	13 22 18.5	6.606
8	19 04 47.08	2.0544	17 18 31.5	3.316	8	20 41 46.27	1.9915	13 15 40.3	6.668
9	19 06 50.30	2.0529	17 15 10.2	3.393	9	20 43 45.73	1.9906	13 08 58.4	6.728
10	19 08 53.43	2.0514	17 11 44.3	3.470	10	20 45 45.14	1.9898	13 02 12.9	6.788
11	19 10 56.47	2.0499	17 08 13.8	3.548	11	20 47 44.50	1.9889	12 55 23.8	6.848
12	19 12 59.42	2.0483	17 04 38.6	3.625	12	20 49 43.81	1.9881	12 48 31.1	6.908
13	19 15 02.27	2.0468	17 00 58.8	3.702	13	20 51 43.07	1.9873	12 41 34.8	6.968
14	19 17 05.04	2.0453	16 57 14.4	3.778	14	20 53 42.28	1.9865	12 34 35.0	7.026
15	19 19 07.71	2.0438	16 53 25.5	3.853	15	20 55 41.45	1.9857	12 27 31.7	7.085
16	19 21 10.29	2.0423	16 49 32.0	3.929	16	20 57 40.57	1.9849	12 20 24.8	7.143
17	19 23 12.79	2.0408	16 45 34.0	4.004	17	20 59 39.64	1.9843	12 13 14.5	7.200
18	19 25 15.19	2.0393	16 41 31.5	4.079	18	21 01 38.68	1.9837	12 06 00.8	7.257
19	19 27 17.51	2.0378	16 37 24.5	4.154	19	21 03 37.68	1.9829	11 58 43.7	7.314
20	19 29 19.73	2.0363	16 33 13.0	4.228	20	21 05 36.63	1.9823	11 51 23.1	7.371
21	19 31 21.87	2.0349	16 28 57.1	4.303	21	21 07 35.55	1.9818	11 43 59.2	7.426
22	19 33 23.92	2.0334	16 24 36.7	4.377	22	21 09 34.44	1.9813	11 36 32.0	7.482
23	19 35 25.88	2.0320	16 20 11.9	4.450	23	21 11 33.30	1.9807	11 29 01.4	7.538
24	19 37 27.76	2.0306	16 15 42.7	4.522	24	21 13 32.12	1.9801	11 21 27.5	7.592
	19 39 29.55	+ 2.0291	S. 16 11 09.2	+ 4.594		21 15 30.91	+ 1.9797	S. 11 13 50.4	+ 7.645

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
TUESDAY 21.					THURSDAY 23.				
0	21 15 30.91	+ 1.9797	S. 11 13 50.4	+ 7.645	0	22 50 36.93	+ 1.9969	S. 4 13 14.4	+ 9.684
1	21 17 29.68	1.9793	11 06 10.1	7.699	1	22 52 36.78	1.9982	4 03 32.5	9.713
2	21 19 28.42	1.9788	10 58 26.5	7.753	2	22 54 36.71	1.9996	3 53 48.8	9.742
3	21 21 27.13	1.9783	10 50 39.7	7.806	3	22 56 36.73	2.0009	3 44 03.5	9.769
4	21 23 25.82	1.9780	10 42 49.8	7.858	4	22 58 36.82	2.0023	3 34 16.5	9.797
5	21 25 24.49	1.9777	10 34 56.7	7.910	5	23 00 37.00	2.0038	3 24 27.9	9.823
6	21 27 23.14	1.9774	10 27 00.6	7.962	6	23 02 37.28	2.0053	3 14 37.7	9.849
7	21 29 21.78	1.9772	10 19 01.3	8.013	7	23 04 37.64	2.0068	3 04 46.0	9.875
8	21 31 20.40	1.9769	10 10 59.0	8.063	8	23 06 38.10	2.0085	2 54 52.7	9.900
9	21 33 19.01	1.9767	10 02 53.7	8.113	9	23 08 38.66	2.0101	2 44 58.0	9.923
10	21 35 17.61	1.9765	9 54 45.4	8.163	10	23 10 39.31	2.0118	2 35 01.9	9.947
11	21 37 16.19	1.9763	9 46 34.1	8.213	11	23 12 40.07	2.0134	2 25 04.4	9.969
12	21 39 14.77	1.9763	9 38 19.8	8.262	12	23 14 40.92	2.0151	2 15 05.6	9.991
13	21 41 13.34	1.9763	9 30 02.7	8.310	13	23 16 41.88	2.0170	2 05 05.5	10.013
14	21 43 11.92	1.9763	9 21 42.6	8.358	14	23 18 42.96	2.0189	1 55 04.1	10.033
15	21 45 10.49	1.9762	9 13 19.7	8.406	15	23 20 44.15	2.0208	1 45 01.5	10.053
16	21 47 09.06	1.9762	9 04 53.9	8.453	16	23 22 45.45	2.0227	1 34 57.7	10.073
17	21 49 07.63	1.9763	8 56 25.3	8.499	17	23 24 46.87	2.0246	1 24 52.8	10.091
18	21 51 06.21	1.9764	8 47 54.0	8.545	18	23 26 48.40	2.0266	1 14 46.8	10.108
19	21 53 04.80	1.9765	8 39 19.9	8.591	19	23 28 50.06	2.0287	1 04 39.8	10.125
20	21 55 03.39	1.9767	8 30 43.1	8.636	20	23 30 51.85	2.0308	0 54 31.8	10.142
21	21 57 02.00	1.9769	8 22 03.6	8.680	21	23 32 53.76	2.0329	0 44 22.8	10.158
22	21 59 00.62	1.9772	8 13 21.5	8.724	22	23 34 55.80	2.0351	0 34 12.9	10.173
23	22 00 59.26	+ 1.9774	S. 8 04 36.7	+ 8.768	23	23 36 57.97	+ 2.0373	S. 0 24 02.1	+ 10.187
WEDNESDAY 22.					FRIDAY 24.				
0	22 02 57.91	+ 1.9777	S. 7 55 49.3	+ 8.811	0	23 39 00.27	+ 2.0395	S. 0 13 50.5	+ 10.200
1	22 04 56.58	1.9781	7 46 59.4	8.853	1	23 41 02.71	2.0418	S. 0 03 38.1	10.212
2	22 06 55.28	1.9785	7 38 06.9	8.896	2	23 43 05.29	2.0443	N. 0 06 34.9	10.223
3	22 08 54.00	1.9789	7 29 11.9	8.938	3	23 45 08.02	2.0467	0 16 48.7	10.235
4	22 10 52.75	1.9794	7 20 14.4	8.978	4	23 47 10.89	2.0490	0 27 03.1	10.245
5	22 12 51.53	1.9799	7 11 14.5	9.019	5	23 49 13.90	2.0515	0 37 18.1	10.254
6	22 14 50.34	1.9804	7 02 12.1	9.059	6	23 51 17.07	2.0540	0 47 33.6	10.263
7	22 16 49.18	1.9810	6 53 07.4	9.098	7	23 53 20.38	2.0565	0 57 49.6	10.270
8	22 18 48.06	1.9817	6 44 00.3	9.137	8	23 55 23.85	2.0592	1 08 06.0	10.277
9	22 20 46.98	1.9823	6 34 50.9	9.175	9	23 57 27.48	2.0618	1 18 22.8	10.283
10	22 22 45.93	1.9829	6 25 39.3	9.213	10	23 59 31.27	2.0645	1 28 40.0	10.288
11	22 24 44.93	1.9837	6 16 25.4	9.251	11	0 01 35.22	2.0672	1 38 57.4	10.293
12	22 26 43.98	1.9845	6 07 09.2	9.288	12	0 03 39.33	2.0699	1 49 15.1	10.297
13	22 28 43.07	1.9853	5 57 50.8	9.324	13	0 05 43.61	2.0728	1 59 33.0	10.299
14	22 30 42.21	1.9862	5 48 30.3	9.359	14	0 07 48.06	2.0756	2 09 51.0	10.301
15	22 32 41.41	1.9871	5 39 07.7	9.394	15	0 09 52.68	2.0784	2 20 09.1	10.302
16	22 34 40.66	1.9880	5 29 43.0	9.429	16	0 11 57.47	2.0813	2 30 27.2	10.301
17	22 36 39.97	1.9890	5 20 16.2	9.463	17	0 14 02.44	2.0843	2 40 45.3	10.301
18	22 38 39.34	1.9900	5 10 47.4	9.496	18	0 16 07.59	2.0873	2 51 03.3	10.299
19	22 40 38.77	1.9910	5 01 16.7	9.528	19	0 18 12.92	2.0904	3 01 21.2	10.297
20	22 42 38.26	1.9921	4 51 44.0	9.561	20	0 20 18.44	2.0935	3 11 38.9	10.293
21	22 44 37.82	1.9933	4 42 09.4	9.593	21	0 22 24.14	2.0966	3 21 56.4	10.288
22	22 46 37.45	1.9944	4 32 32.9	9.623	22	0 24 30.03	2.0998	3 32 13.5	10.283
23	22 48 37.15	1.9957	4 22 54.6	9.654	23	0 26 36.11	2.1029	3 42 30.3	10.276
24	22 50 36.93	+ 1.9969	S. 4 13 14.4	+ 9.684	24	0 28 42.38	+ 2.1062	N. 3 52 46.6	+ 10.268

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
. SATURDAY 25.					MONDAY 27.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
0	28 42.38	+ 2.1062	N. 3 52 46.6	+ 10.268	0	2 14 07.47	+ 2.2953	N. 11 37 41.7	+ 8.678
1	0 30 48.85	2.1094	4 03 02.5	10.261	1	2 16 25.32	2.2998	11 46 20.6	8.618
2	0 32 55.51	2.1127	4 13 17.9	10.252	2	2 18 43.44	2.3041	11 54 55.8	8.555
3	0 35 02.37	2.1161	4 23 32.7	10.242	3	2 21 01.81	2.3084	12 03 27.2	8.491
4	0 37 09.44	2.1195	4 33 46.9	10.231	4	2 23 20.45	2.3127	12 11 54.7	8.427
5	0 39 16.71	2.1228	4 44 00.4	10.218	5	2 25 39.34	2.3171	12 20 18.4	8.361
6	0 41 24.18	2.1263	4 54 13.1	10.205	6	2 27 58.50	2.3215	12 28 38.0	8.293
7	0 43 31.87	2.1298	5 04 25.0	10.191	7	2 30 17.92	2.3258	12 36 53.6	8.226
8	0 45 39.76	2.1333	5 14 36.0	10.176	8	2 32 37.59	2.3301	12 45 05.1	8.157
9	0 47 47.86	2.1368	5 24 46.1	10.160	9	2 34 57.53	2.3344	12 53 12.4	8.087
10	0 49 56.18	2.1405	5 34 55.2	10.143	10	2 37 17.72	2.3387	13 01 15.5	8.015
11	0 52 04.72	2.1441	5 45 03.2	10.124	11	2 39 38.17	2.3429	13 09 14.2	7.941
12	0 54 13.47	2.1477	5 55 10.1	10.105	12	2 41 58.87	2.3473	13 17 08.4	7.867
13	0 56 22.44	2.1514	6 05 15.8	10.085	13	2 44 19.84	2.3516	13 24 58.2	7.792
14	0 58 31.64	2.1552	6 15 20.3	10.063	14	2 46 41.06	2.3558	13 32 43.4	7.715
15	1 00 41.06	2.1588	6 25 23.4	10.041	15	2 49 02.53	2.3600	13 40 24.0	7.638
16	1 02 50.70	2.1626	6 35 25.2	10.018	16	2 51 24.26	2.3643	13 47 59.9	7.559
17	1 05 00.57	2.1664	6 45 25.6	9.993	17	2 53 46.24	2.3685	13 55 31.1	7.480
18	1 07 10.67	2.1703	6 55 24.4	9.968	18	2 56 08.48	2.3727	14 02 57.5	7.398
19	1 09 21.01	2.1742	7 05 21.7	9.942	19	2 58 30.96	2.3768	14 10 18.9	7.316
20	1 11 31.57	2.1780	7 15 17.4	9.914	20	3 00 53.70	2.3810	14 17 35.4	7.233
21	1 13 42.37	2.1820	7 25 11.4	9.885	21	3 03 16.68	2.3850	14 24 46.9	7.149
22	1 15 53.41	2.1860	7 35 03.6	9.855	22	3 05 39.90	2.3891	14 31 53.3	7.065
23	1 18 04.69	+ 2.1899	N. 7 44 54.0	+ 9.824	23	3 08 03.37	+ 2.3933	N. 14 38 54.5	+ 6.977
SUNDAY 26.					TUESDAY 28.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
0	1 20 16.20	+ 2.1938	N. 7 54 42.5	+ 9.792	0	3 10 27.09	+ 2.3973	N. 14 45 50.5	+ 6.889
1	1 22 27.95	2.1979	8 04 29.0	9.758	1	3 12 51.04	2.4012	14 52 41.2	6.800
2	1 24 39.95	2.2020	8 14 13.5	9.724	2	3 15 15.23	2.4052	14 59 26.5	6.710
3	1 26 52.19	2.2061	8 23 55.9	9.689	3	3 17 39.66	2.4091	15 06 06.4	6.619
4	1 29 04.68	2.2102	8 33 36.2	9.653	4	3 20 04.32	2.4130	15 12 40.8	6.528
5	1 31 17.41	2.2143	8 43 14.2	9.615	5	3 22 29.22	2.4169	15 19 09.7	6.434
6	1 33 30.39	2.2184	8 52 50.0	9.577	6	3 24 54.35	2.4207	15 25 32.9	6.339
7	1 35 43.62	2.2226	9 02 23.4	9.536	7	3 27 19.70	2.4244	15 31 50.4	6.244
8	1 37 57.10	2.2268	9 11 54.3	9.494	8	3 29 45.28	2.4282	15 38 02.2	6.148
9	1 40 10.83	2.2309	9 21 22.7	9.453	9	3 32 11.08	2.4318	15 44 08.2	6.052
10	1 42 24.81	2.2351	9 30 48.6	9.410	10	3 34 37.10	2.4355	15 50 08.4	5.953
11	1 44 39.04	2.2393	9 40 11.9	9.365	11	3 37 03.34	2.4391	15 56 02.6	5.853
12	1 46 53.52	2.2435	9 49 32.4	9.318	12	3 39 29.79	2.4427	16 01 50.8	5.753
13	1 49 08.26	2.2478	9 58 50.1	9.272	13	3 41 56.46	2.4463	16 07 33.0	5.653
14	1 51 23.26	2.2522	10 08 05.0	9.224	14	3 44 23.34	2.4497	16 13 09.1	5.550
15	1 53 38.52	2.2564	10 17 17.0	9.175	15	3 46 50.42	2.4530	16 18 39.0	5.447
16	1 55 54.03	2.2607	10 26 26.0	9.124	16	3 49 17.70	2.4563	16 24 02.7	5.343
17	1 58 09.80	2.2650	10 35 31.9	9.073	17	3 51 45.18	2.4597	16 29 20.2	5.238
18	2 00 25.83	2.2693	10 44 34.7	9.020	18	3 54 12.86	2.4630	16 34 31.3	5.133
19	2 02 42.12	2.2737	10 53 34.3	8.966	19	3 56 40.74	2.4662	16 39 36.1	5.026
20	2 04 58.67	2.2780	11 02 30.6	8.911	20	3 59 08.80	2.4693	16 44 34.4	4.918
21	2 07 15.48	2.2823	11 11 23.6	8.854	21	4 01 37.05	2.4723	16 49 26.3	4.810
22	2 09 32.55	2.2867	11 20 13.1	8.797	22	4 04 05.48	2.4753	16 54 11.6	4.700
23	2 11 49.88	2.2910	11 28 59.2	8.738	23	4 06 34.09	2.4783	16 58 50.3	4.590
24	2 14 07.47	+ 2.2953	N. 11 37 41.7	+ 8.678	24	4 09 02.87	+ 2.4811	N. 17 03 22.4	+ 4.479

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
WEDNESDAY 29.					FRIDAY, MAY 1.				
	^h ^m ^s	^s	[°] ['] ["]	["]		^h ^m ^s	^s	[°] ['] ["]	["]
0	4 09 02.87	+ 2.4811	N.17 03 22.4	+ 4.479	0	6 10 02.48	+ 2.5287	N.18 20 11.7	- 1.388
1	4 11 31.82	2.4839	17 07 47.8	4.368	PHASES OF THE MOON.				
2	4 14 00.94	2.4868	17 12 06.5	4.256					
3	4 16 30.23	2.4895	17 16 18.5	4.143					
4	4 18 59.68	2.4920	17 20 23.6	4.028					
5	4 21 29.27	2.4945	17 24 21.9	3.914					
6	4 23 59.02	2.4971	17 28 13.3	3.798					
7	4 26 28.92	2.4995	17 31 57.7	3.683					
8	4 28 58.96	2.5018	17 35 35.2	3.567					
9	4 31 29.14	2.5041	17 39 05.7	3.449					
10	4 33 59.45	2.5063	17 42 29.1	3.331					
11	4 36 29.89	2.5084	17 45 45.4	3.213	☾ First Quarter . . . Apr. 4 13 51.4 ○ Full Moon 11 12 18.4 ☾ Last Quarter 19 09 30.2 ● New Moon 27 01 31.4				
12	4 39 00.46	2.5105	17 48 54.6	3.093					
13	4 41 31.15	2.5124	17 51 56.6	2.974					
14	4 44 01.95	2.5143	17 54 51.5	2.854					
15	4 46 32.86	2.5161	17 57 39.1	2.733					
16	4 49 03.88	2.5178	18 00 19.4	2.611					
17	4 51 35.00	2.5194	18 02 52.4	2.490					
18	4 54 06.21	2.5210	18 05 18.2	2.368					
19	4 56 37.52	2.5225	18 07 36.6	2.246					
20	4 59 08.91	2.5239	18 09 47.7	2.123	☾ Perigee Apr. 5 06.8 ☾ Apogee 18 16.8 ☾ Perigee 30 17.0				
21	5 01 40.39	2.5253	18 11 51.4	1.999					
22	5 04 11.94	2.5264	18 13 47.6	1.876					
23	5 06 43.56	+ 2.5276	N.18 15 36.5	+ 1.753					
THURSDAY 30.									
0	5 09 15.25	+ 2.5287	N.18 17 17.9	+ 1.628					
1	5 11 47.00	2.5297	18 18 51.8	1.503					
2	5 14 18.81	2.5306	18 20 18.3	1.379					
3	5 16 50.67	2.5313	18 21 37.3	1.253					
4	5 19 22.57	2.5321	18 22 48.7	1.128					
5	5 21 54.52	2.5328	18 23 52.6	1.003					
6	5 24 26.50	2.5333	18 24 49.0	0.878					
7	5 26 58.51	2.5338	18 25 37.9	0.752					
8	5 29 30.55	2.5342	18 26 19.2	0.625					
9	5 32 02.61	2.5345	18 26 52.9	0.499					
10	5 34 34.69	2.5348	18 27 19.1	0.373					
11	5 37 06.78	2.5348	18 27 37.7	0.248					
12	5 39 38.86	2.5348	18 27 48.8	+ 0.122					
13	5 42 10.95	2.5348	18 27 52.3	- 0.005					
14	5 44 43.03	2.5347	18 27 48.2	0.132					
15	5 47 15.11	2.5345	18 27 36.5	0.258					
16	5 49 47.17	2.5342	18 27 17.3	0.383					
17	5 52 19.21	2.5338	18 26 50.5	0.510					
18	5 54 51.22	2.5333	18 26 16.1	0.636					
19	5 57 23.20	2.5328	18 25 34.2	0.761					
20	5 59 55.15	2.5322	18 24 44.8	0.887					
21	6 02 27.06	2.5314	18 23 47.8	1.013					
22	6 04 58.92	2.5306	18 22 43.3	1.138					
23	6 07 30.73	2.5297	18 21 31.3	1.263					
24	6 10 02.48	+ 2.5287	N.18 20 11.7	- 1.388					

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Noon.	P. L. of Diff.	IIIh	P. L. of Diff.	VIh	P. L. of Diff.	IXh	P. L. of Diff.
1	SUN	W.	43 13 53	2693	44 50 42	2687	46 27 39	2682	48 04 45	2677
	VENUS	W.	14 22 41	2813	15 56 52	2801	17 31 19	2790	19 06 00	2779
	Pollux	E.	58 53 58	2506	57 12 53	2507	55 31 49	2507	53 50 46	2510
	Regulus	E.	94 47 08	2386	93 03 13	2381	91 19 11	2375	89 35 01	2371
2	SUN	W.	56 11 46	2654	57 49 28	2650	59 27 15	2646	61 05 08	2642
	VENUS	W.	27 02 19	2744	28 38 00	2738	30 13 49	2734	31 49 44	2729
	Pollux	E.	45 26 39	2535	43 46 14	2545	42 06 03	2556	40 26 07	2568
	Regulus	E.	80 52 39	2351	79 07 54	2347	77 23 03	2344	75 38 07	2341
	MARS	E.	118 16 13	2233	116 28 34	2228	114 40 48	2225	112 52 57	2221
3	SUN	W.	69 15 42	2626	70 54 01	2624	72 32 23	2621	74 10 49	2618
	VENUS	W.	39 50 47	2710	41 27 14	2707	43 03 45	2704	44 40 20	2701
	Aldebaran	W.	13 16 23	2330	15 01 39	2325	16 47 02	2320	18 32 32	2316
	Regulus	E.	66 52 26	2328	65 07 07	2326	63 21 46	2324	61 36 21	2322
	MARS	E.	103 52 31	2206	102 04 13	2204	100 15 52	2202	98 27 27	2199
	Spica	E.	120 24 36	2319	118 39 04	2316	116 53 28	2314	115 07 49	2311
4	SUN	W.	82 23 45	2610	84 02 27	2607	85 41 12	2606	87 19 59	2604
	VENUS	W.	52 44 06	2690	54 20 59	2688	55 57 55	2687	57 34 53	2685
	Aldebaran	W.	27 21 21	2302	29 07 18	2300	30 53 18	2298	32 39 21	2296
	Regulus	E.	52 48 48	2317	51 03 13	2317	49 17 38	2316	47 32 02	2317
	MARS	E.	89 24 38	2191	87 35 57	2190	85 47 15	2189	83 58 31	2188
	Spica	E.	106 18 45	2302	104 32 48	2300	102 46 49	2298	101 00 47	2298
5	SUN	W.	95 34 20	2600	97 13 15	2599	98 52 11	2599	100 31 08	2599
	VENUS	W.	65 40 08	2680	67 17 15	2680	68 54 22	2679	70 31 30	2679
	Aldebaran	W.	41 30 04	2291	43 16 17	2290	45 02 31	2289	46 48 46	2289
	Regulus	E.	38 44 16	2322	36 58 48	2324	35 13 24	2327	33 28 04	2331
	MARS	E.	74 54 32	2185	73 05 42	2185	71 16 52	2185	69 28 02	2186
	Spica	E.	92 10 17	2293	90 24 07	2293	88 37 57	2292	86 51 46	2292
6	SUN	W.	108 45 53	2599	110 24 49	2601	112 03 43	2601	113 42 36	2604
	VENUS	W.	78 37 10	2680	80 14 17	2681	81 51 22	2682	83 28 26	2684
	Aldebaran	W.	55 40 02	2290	57 26 16	2291	59 12 29	2291	60 58 41	2293
	MARS	E.	60 24 03	2189	58 35 19	2191	56 46 38	2192	54 57 59	2194
	Spica	E.	78 00 52	2294	76 14 43	2294	74 28 35	2295	72 42 28	2296
	Antares	E.	123 18 51	2360	121 34 19	2358	119 49 44	2357	118 05 07	2355
7	VENUS	W.	91 33 15	2692	93 10 05	2695	94 46 51	2698	96 23 34	2701
	Aldebaran	W.	69 49 13	2300	71 35 12	2302	73 21 08	2304	75 07 01	2307
	Pollux	W.	28 51 16	2714	30 27 37	2677	32 04 48	2645	33 42 42	2617
	MARS	E.	45 55 34	2208	44 07 18	2211	42 19 07	2216	40 31 03	2220
	Spica	E.	63 52 26	2305	62 06 34	2307	60 20 45	2310	58 35 00	2313
	Antares	E.	109 21 48	2356	107 37 10	2357	105 52 33	2358	104 07 58	2359
8	VENUS	W.	104 26 00	2720	106 02 13	2725	107 38 20	2730	109 14 20	2735
	Aldebaran	W.	83 55 19	2324	85 40 43	2328	87 26 02	2333	89 11 14	2337
	Pollux	W.	41 59 51	2534	43 40 17	2525	45 20 56	2517	47 01 45	2512
	Spica	E.	49 47 25	2331	48 02 10	2336	46 17 03	2340	44 32 02	2346
	Antares	E.	95 25 51	2374	93 41 39	2378	91 57 33	2382	90 13 33	2387

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.	P. L. of Diff.	XVh	P. L. of Diff.	XVIIIh	P. L. of Diff.	XXIh	P. L. of Diff.
			° ' "		° ' "		° ' "		° ' "	
1	SUN	W.	49 41 57	2672	51 19 15	2666	52 56 39	2661	54 34 10	2657
	VENUS	W.	20 40 55	2770	22 16 02	2763	23 51 19	2756	25 26 45	2750
	Pollux	E.	52 09 46	2512	50 28 50	2516	48 47 59	2521	47 07 15	2527
	Regulus	E.	87 50 45	2367	86 06 23	2362	84 21 54	2358	82 37 19	2355
2	SUN	W.	62 43 06	2639	64 21 08	2635	65 59 15	2632	67 37 26	2629
	VENUS	W.	33 25 46	2725	35 01 53	2720	36 38 06	2716	38 14 24	2713
	Pollux	E.	38 46 28	2585	37 07 12	2604	35 28 23	2626	33 50 04	2652
	Regulus	E.	73 53 07	2338	72 08 03	2335	70 22 54	2333	68 37 42	2330
	MARS	E.	111 05 01	2218	109 17 00	2215	107 28 55	2212	105 40 45	2209
3	SUN	W.	75 49 19	2617	77 27 51	2615	79 06 26	2612	80 45 04	2610
	VENUS	W.	46 16 59	2698	47 53 41	2696	49 30 26	2693	51 07 15	2692
	Aldebaran	W.	20 18 08	2312	22 03 50	2309	23 49 37	2307	25 35 27	2304
	Regulus	E.	59 50 54	2321	58 05 25	2320	56 19 54	2319	54 34 22	2317
	MARS	E.	96 38 58	2198	94 50 27	2196	93 01 53	2194	91 13 17	2192
	Spica	E.	113 22 06	2309	111 36 20	2307	109 50 31	2305	108 04 39	2304
4	SUN	W.	88 58 48	2603	90 37 39	2602	92 16 31	2601	93 55 25	2600
	VENUS	W.	59 11 53	2684	60 48 55	2683	62 25 58	2682	64 03 02	2681
	Aldebaran	W.	34 25 26	2295	36 11 33	2294	37 57 41	2292	39 43 52	2291
	Regulus	E.	45 46 27	2317	44 00 52	2317	42 15 18	2319	40 29 46	2320
	MARS	E.	82 09 45	2187	80 20 58	2186	78 32 10	2186	76 43 21	2186
	Spica	E.	99 14 44	2296	97 28 39	2296	95 42 33	2295	93 56 26	2294
5	SUN	W.	102 10 05	2599	103 49 02	2599	105 27 59	2599	107 06 56	2599
	VENUS	W.	72 08 38	2678	73 45 47	2679	75 22 55	2679	77 00 03	2680
	Aldebaran	W.	48 35 01	2289	50 21 16	2289	52 07 32	2289	53 53 47	2289
	Regulus	E.	31 42 50	2337	29 57 44	2342	28 12 45	2348	26 27 55	2355
	MARS	E.	67 39 12	2186	65 50 23	2186	64 01 35	2187	62 12 48	2188
	Spica	E.	85 05 35	2291	83 19 23	2293	81 33 13	2292	79 47 02	2293
6	SUN	W.	115 21 28	2604	117 00 18	2605	118 39 06	2607	120 17 52	2608
	VENUS	W.	85 05 28	2685	86 42 28	2687	88 19 26	2688	89 56 22	2690
	Aldebaran	W.	62 44 51	2294	64 30 59	2295	66 17 06	2296	68 03 11	2298
	MARS	E.	53 09 23	2196	51 20 50	2198	49 32 20	2202	47 43 55	2204
	Spica	E.	70 56 23	2298	69 10 20	2300	67 24 20	2301	65 38 22	2302
	Antares	E.	116 20 28	2355	114 35 48	2355	112 51 08	2355	111 06 28	2355
7	VENUS	W.	98 00 13	2704	99 36 48	2708	101 13 17	2712	102 49 41	2716
	Aldebaran	W.	76 52 50	2311	78 38 34	2313	80 24 14	2317	82 09 49	2320
	Pollux	W.	35 21 14	2593	37 00 18	2574	38 39 48	2559	40 19 40	2545
	MARS	E.	38 43 06	2226	36 55 17	2231	35 07 36	2237	33 20 04	2244
	Spica	E.	56 49 19	2316	55 03 43	2320	53 18 12	2323	51 32 46	2326
	Antares	E.	102 23 25	2362	100 38 56	2364	98 54 30	2367	97 10 08	2371
8	VENUS	W.	110 50 13	2741	112 25 58	2747	114 01 36	2753	115 37 05	2760
	Aldebaran	W.	90 56 20	2342	92 41 18	2347	94 26 09	2352	96 10 53	2358
	Pollux	W.	48 42 42	2507	50 23 45	2504	52 04 52	2502	53 46 02	2502
	Spica	E.	42 47 09	2351	41 02 24	2357	39 17 48	2364	37 33 21	2370
	Antares	E.	88 29 39	2391	86 45 52	2397	85 02 13	2403	83 18 42	2408

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.	Noon.	P. L. of Diff.	IIIh	P. L. of Diff.	VIh	P. L. of Diff.	IXh	P. L. of Diff.
9	Aldebaran W.	97 55 28	2364	99 39 55	2371	101 24 12	2377	103 08 20	2384
	Pollux W.	55 27 13	2502	57 08 24	2502	58 49 34	2504	60 30 42	2506
	Regulus W.	18 24 52	2479	20 06 35	2470	21 48 31	2462	23 30 37	2458
	Spica E.	35 49 03	2378	34 04 56	2385	32 21 00	2392	30 37 14	2401
	Antares E.	81 35 19	2415	79 52 06	2422	78 09 03	2429	76 26 10	2436
10	Aldebaran W.	111 46 25	2422	113 29 28	2430	115 12 20	2439	116 54 59	2448
	Pollux W.	68 55 10	2529	70 35 43	2535	72 16 07	2542	73 56 22	2549
	Regulus W.	32 01 45	2464	33 43 49	2468	35 25 47	2474	37 07 37	2480
	Antares E.	67 54 35	2481	66 12 55	2491	64 31 29	2501	62 50 17	2512
	α Aquilæ E.	116 33 57	2924	115 02 08	2919	113 30 13	2916	111 58 14	2913
11	Pollux W.	82 14 55	2593	83 54 00	2602	85 32 52	2612	87 11 30	2623
	Regulus W.	45 34 17	2520	47 15 02	2529	48 55 35	2539	50 35 54	2548
	Antares E.	54 28 23	2574	52 48 53	2589	51 09 43	2604	49 30 53	2618
	α Aquilæ E.	104 18 06	2920	102 46 13	2926	101 14 27	2931	99 42 47	2938
	SATURN E.	114 03 06	2538	112 22 45	2548	110 42 38	2558	109 02 45	2568
12	Pollux W.	95 20 54	2682	96 57 58	2695	98 34 45	2707	100 11 15	2720
	Regulus W.	58 53 58	2603	60 32 49	2614	62 11 25	2626	63 49 45	2638
	MARS W.	25 15 07	2530	26 55 38	2538	28 35 59	2545	30 16 10	2553
	Antares E.	41 22 14	2707	39 45 44	2729	38 09 42	2750	36 34 09	2774
	α Aquilæ E.	92 07 02	2985	90 36 30	2997	89 06 14	3009	87 36 13	3022
13	SATURN E.	100 47 03	2625	99 08 42	2636	97 30 36	2648	95 52 46	2660
	Pollux W.	108 09 16	2792	109 43 55	2806	111 18 15	2821	112 52 15	2836
	Regulus W.	71 57 22	2698	73 34 04	2711	75 10 29	2723	76 46 38	2736
	MARS W.	38 33 58	2603	40 12 49	2614	41 51 25	2625	43 29 46	2636
	Spica W.	18 26 31	2725	20 02 34	2734	21 38 28	2744	23 14 12	2753
14	α Aquilæ E.	80 10 28	3099	78 42 17	3117	77 14 28	3135	75 47 01	3153
	SATURN E.	87 47 48	2723	86 11 39	2735	84 35 46	2748	83 00 10	2762
	JUPITER E.	121 35 46	2771	120 00 40	2782	118 25 49	2795	116 51 14	2807
	Regulus W.	84 43 11	2798	86 17 41	2811	87 51 54	2824	89 25 51	2835
	MARS W.	51 37 35	2695	53 14 21	2707	54 50 51	2719	56 27 06	2731
15	Spica W.	31 09 40	2803	32 44 04	2815	34 18 13	2825	35 52 09	2836
	α Aquilæ E.	68 35 39	3259	67 10 40	3282	65 46 08	3307	64 22 05	3332
	SATURN E.	75 06 27	2826	73 32 33	2839	71 58 56	2851	70 25 34	2864
	JUPITER E.	109 02 25	2870	107 29 28	2883	105 56 47	2894	104 24 21	2907
	Regulus W.	97 11 43	2895	98 44 08	2906	100 16 19	2917	101 48 16	2928
16	MARS W.	64 24 26	2788	65 59 09	2800	67 33 37	2810	69 07 52	2821
	Spica W.	43 38 08	2892	45 10 37	2902	46 42 53	2912	48 14 56	2924
	α Aquilæ E.	57 29 33	3478	56 08 44	3510	54 48 31	3543	53 28 57	3583
	SATURN E.	62 42 48	2926	61 11 02	2938	59 39 31	2949	58 08 14	2961
	JUPITER E.	96 46 04	2966	95 15 09	2977	93 44 28	2989	92 14 01	2999
16	Regulus W.	109 24 39	2979	110 55 18	2989	112 25 45	2997	113 56 01	3006
	MARS W.	76 55 43	2871	78 28 39	2880	80 01 23	2889	81 33 56	2897
	Spica W.	55 51 56	2972	57 22 44	2981	58 53 21	2989	60 23 48	2997
	α Aquilæ E.	47 01 55	3803	45 46 56	3816	44 32 52	3915	43 19 47	3976
	SATURN E.	50 35 26	3016	49 05 33	3027	47 35 54	3037	46 06 27	3047

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.	P. L. of Diff.	XV ^h	P. L. of Diff.	XVIII ^h	P. L. of Diff.	XXI ^h	P. L. of Diff.
9	Aldebaran	W.	104 52 18	2391	106 36 06	2398	108 19 43	2405	110 03 10	2414
	Pollux	W.	62 11 47	2310	63 52 47	2314	65 33 41	2318	67 14 29	2323
	Regulus	W.	25 12 49	2455	26 55 05	2455	28 37 22	2457	30 19 36	2460
	Spica	E.	28 53 40	2409	27 10 21	2419	28 27 15	2429	29 44 25	2441
	Antares	E.	74 43 27	2445	73 00 56	2453	71 18 36	2462	69 36 29	2471
10	Aldebaran	W.	118 37 25	2458	120 19 38	2467	122 01 37	2477	123 43 22	2487
	Pollux	W.	75 36 27	2357	77 16 21	2365	78 56 04	2373	80 35 36	2383
	Regulus	W.	38 49 18	2487	40 30 49	2495	42 12 09	2508	43 53 19	2511
	Antares	E.	61 09 21	2524	59 28 41	2536	57 48 18	2548	56 08 12	2561
	α Aquilæ	E.	110 26 12	2912	108 54 09	2912	107 22 06	2913	105 50 04	2916
11	Pollux	W.	88 49 54	2635	90 28 02	2646	92 05 55	2657	93 43 33	2669
	Regulus	W.	52 16 00	2559	53 55 52	2570	55 35 28	2580	57 14 51	2591
	Antares	E.	47 52 23	2635	46 14 15	2652	44 36 30	2669	42 59 09	2689
	α Aquilæ	E.	98 11 16	2946	96 39 55	2955	95 08 46	2964	93 37 48	2973
	SATURN	E.	107 23 06	2579	105 43 42	2591	104 04 34	2601	102 25 41	2612
12	Pollux	W.	101 47 28	2734	103 23 23	2748	104 58 59	2762	106 34 17	2776
	Regulus	W.	65 27 49	2649	67 05 37	2662	68 43 08	2674	70 20 23	2686
	MARS	W.	31 56 09	2562	33 35 56	2571	35 15 31	2581	36 54 52	2592
	Antares	E.	34 59 07	2800	33 24 39	2827	31 50 46	2856	30 17 31	2888
	α Aquilæ	E.	86 06 27	3036	84 36 59	3052	83 07 50	3066	81 38 59	3082
13	SATURN	E.	94 15 13	2673	92 37 57	2685	91 00 57	2698	89 24 14	2710
	Pollux	W.	114 25 56	2852	115 59 17	2869	117 32 16	2884	119 04 55	2900
	Regulus	W.	78 22 30	2749	79 58 05	2762	81 33 23	2774	83 08 25	2786
	MARS	W.	45 07 52	2649	46 45 41	2660	48 23 15	2672	50 00 33	2684
	Spica	W.	24 49 44	2761	26 25 03	2771	28 00 09	2782	29 35 01	2792
14	α Aquilæ	E.	74 19 56	3173	72 53 14	3194	71 26 58	3214	70 01 06	3236
	SATURN	E.	81 24 52	2775	79 49 51	2788	78 15 07	2800	76 40 39	2812
	JUPITER	E.	115 16 55	2820	113 42 53	2833	112 09 08	2845	110 35 38	2858
	Regulus	W.	90 59 33	2848	92 32 58	2860	94 06 08	2872	95 39 03	2883
	MARS	W.	58 03 05	2743	59 38 48	2755	61 14 15	2766	62 49 28	2777
15	Spica	W.	37 25 50	2848	38 59 16	2859	40 32 27	2870	42 05 24	2880
	α Aquilæ	E.	62 58 31	3359	61 35 28	3386	60 12 56	3415	58 50 57	3446
	SATURN	E.	68 52 29	2876	67 19 40	2889	65 47 07	2901	64 14 50	2913
	JUPITER	E.	102 52 11	2920	101 20 17	2931	99 48 38	2943	98 17 14	2954
	Regulus	W.	103 19 59	2939	104 51 28	2950	106 22 44	2959	107 53 48	2969
16	MARS	W.	70 41 53	2831	72 15 40	2842	73 49 13	2852	75 22 34	2861
	Spica	W.	49 46 45	2934	51 18 21	2944	52 49 44	2953	54 20 56	2962
	α Aquilæ	E.	52 10 04	3622	50 51 53	3663	49 34 26	3707	48 17 46	3753
	SATURN	E.	56 37 12	2973	55 06 25	2984	53 35 52	2994	52 05 32	3005
	JUPITER	E.	90 43 47	3010	89 13 47	3021	87 44 00	3030	86 14 25	3040
16	Regulus	W.	115 26 06	3014	116 56 01	3022	118 25 46	3030	119 55 21	3038
	MARS	W.	83 06 19	2905	84 38 31	2913	86 10 33	2920	87 42 26	2928
	Spica	W.	61 54 05	3005	63 24 12	3013	64 54 09	3019	66 23 58	3026
	α Aquilæ	E.	42 07 44	4044	40 56 48	4118	39 47 04	4198	38 38 36	4285
	SATURN	E.	44 37 12	3056	43 08 09	3067	41 39 19	3077	40 10 41	3086

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.	Noon.	P. L. of Diff.	IIIh	P. L. of Diff.	VIh	P. L. of Diff.	IXh	P. L. of Diff.
16	JUPITER E. SUN E.	84 45 02 127 10 05	3050 3330	83 15 51 125 46 28	3059 3339	81 46 51 124 23 02	3067 3349	80 18 01 122 59 47	3076 3358
17	MARS W. Spica W. Antares W. α Aquilæ E. SATURN E. JUPITER E. SUN E.	89 14 09 67 53 38 23 41 33 37 31 30 38 42 14 72 56 22 116 05 55	2935 3033 3341 4383 3096 3114 3397	90 45 44 69 23 10 25 04 57 36 25 53 37 13 59 71 28 29 114 43 35	2941 3039 3316 4490 3105 3119 3403	92 17 11 70 52 35 26 28 50 35 21 52 35 45 55 70 00 43 113 21 22	2946 3044 3294 4609 3114 3125 3409	93 48 31 72 21 53 27 53 08 34 19 35 34 18 03 68 33 04 111 59 16	2953 3049 3275 4740 3124 3130 3415
18	MARS W. Spica W. Antares W. JUPITER E. SUN E.	101 23 34 79 47 01 34 59 12 61 16 18 105 10 10	2974 3068 3216 3152 3436	102 54 19 81 15 50 36 25 02 59 49 11 103 48 34	2977 3071 3208 3154 3438	104 25 00 82 44 35 37 51 02 58 22 07 102 27 01	2980 3073 3200 3156 3440	105 55 38 84 13 18 39 17 11 56 55 05 101 05 30	2981 3073 3194 3158 3443
19	Spica W. Antares W. JUPITER E. SUN E.	91 36 39 46 29 43 49 40 24 94 18 16	3074 3165 3161 3442	93 05 20 47 56 34 48 13 28 92 56 47	3073 3159 3161 3441	94 34 02 49 23 32 46 46 32 91 35 17	3071 3153 3159 3439	96 02 47 50 50 38 45 19 34 90 13 45	3069 3147 3158 3437
20	Spica W. Antares W. JUPITER E. SUN E.	103 27 27 58 07 57 38 04 09 83 25 10	3050 3114 3145 3416	104 56 38 59 35 49 36 36 54 82 03 12	3045 3107 3141 3410	106 25 55 61 03 50 35 09 34 80 41 07	3039 3099 3138 3404	107 55 20 62 32 01 33 42 10 79 18 55	3033 3091 3133 3397
21	Antares W. JUPITER E. SUN E.	69 55 25 26 23 50 72 25 48	3047 3113 3356	71 24 40 24 55 56 71 02 41	3037 3110 3347	72 54 07 23 27 59 69 39 24	3026 3106 3337	74 23 48 21 59 57 68 15 55	3016 3105 3325
22	Antares W. SUN E.	81 55 30 61 15 17	2960 3267	83 26 33 59 50 27	2947 3255	84 57 52 58 25 23	2935 3242	86 29 27 57 00 03	2922 3229
23	Antares W. SUN E.	94 11 28 49 49 20	2855 3158	95 44 44 48 22 20	2843 3142	97 18 16 46 55 01	2828 3127	98 52 07 45 27 24	2815 3112
24	Antares W. SUN E.	106 45 54 38 04 37	2744 3034	108 21 35 36 35 06	2731 3018	109 57 34 35 05 16	2717 3002	111 33 51 33 35 06	2703 2986
25	SUN E.	25 59 23	2910	24 27 17	2896	22 54 53	2882	21 22 11	2869
28	SUN W. Regulus E.	12 33 51 99 14 46	2629 2294	14 12 06 97 28 38	2613 2287	15 50 43 95 42 19	2600 2279	17 29 38 93 55 49	2589 2272
29	SUN W. Regulus E. MARS E.	25 47 38 85 01 03 114 39 48	2548 2245 2202	27 27 44 83 13 43 112 51 23	2542 2241 2198	29 07 59 81 26 17 111 02 53	2537 2238 2194	30 48 21 79 38 46 109 14 17	2533 2235 2192
30	SUN W. Regulus E. MARS E.	39 11 24 70 40 13 100 10 24	2520 2226 2183	40 52 10 68 52 24 98 21 31	2518 2225 2183	42 32 58 67 04 34 96 32 38	2517 2225 2182	44 13 47 65 16 44 94 43 44	2517 2225 2183

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.	Midnight.	P. L. of Diff.	XV ^h	P. L. of Diff.	XVIII ^h	P. L. of Diff.	XXI ^h	P. L. of Diff.
		° ' "		° ' "		° ' "		° ' "	
16	JUPITER E.	78 49 22	3084	77 20 53	3092	75 52 34	3100	74 24 24	3106
	SUN E.	121 36 42	3366	120 13 47	3374	118 51 01	3382	117 28 24	3389
17	MARS W.	95 19 43	2958	96 50 49	2962	98 21 49	2966	99 52 44	2970
	Spica W.	73 51 05	3054	75 20 11	3058	76 49 12	3061	78 18 09	3065
	Antares W.	29 17 49	3259	30 42 49	3246	32 08 04	3235	33 33 32	3225
	α Aquilæ E.	33 19 09	4889	32 20 45	5057	31 24 34	5246	30 30 47	5457
	SATURN E.	32 50 23	3134	31 22 55	3144	29 55 39	3154	28 28 35	3166
	JUPITER E.	67 05 31	3136	65 38 05	3141	64 10 45	3144	62 43 29	3148
	SUN E.	110 37 16	3420	109 15 22	3425	107 53 34	3429	106 31 50	3432
18	MARS W.	107 26 14	2983	108 56 48	2985	110 27 20	2985	111 57 51	2985
	Spica W.	85 42 00	3075	87 10 40	3076	88 39 19	3075	90 07 59	3075
	Antares W.	40 43 27	3188	42 09 50	3183	43 36 20	3176	45 02 58	3170
	JUPITER E.	55 28 06	3160	54 01 09	3162	52 34 14	3162	51 07 19	3162
	SUN E.	99 44 02	3444	98 22 35	3445	97 01 09	3445	95 39 43	3444
19	Spica W.	97 31 35	3066	99 00 26	3063	100 29 21	3059	101 58 21	3054
	Antares W.	52 17 51	3141	53 45 11	3135	55 12 38	3129	56 40 13	3121
	JUPITER E.	43 52 35	3156	42 25 33	3153	40 58 28	3151	39 31 20	3148
	SUN E.	88 52 10	3434	87 30 32	3431	86 08 50	3426	84 47 03	3421
20	Spica W.	109 24 52	3026	110 54 32	3019	112 24 21	3012	113 54 19	3003
	Antares W.	64 00 21	3085	65 28 51	3075	66 57 31	3066	68 26 22	3056
	JUPITER E.	32 14 40	3129	30 47 05	3124	29 19 25	3120	27 51 40	3116
	SUN E.	77 56 35	3390	76 34 07	3383	75 11 31	3374	73 48 45	3365
21	Antares W.	75 53 41	3005	77 23 47	2994	78 54 07	2983	80 24 41	2971
	JUPITER E.	20 31 53	3107	19 03 52	3111	17 35 56	3116	16 08 06	3121
	SUN E.	66 52 13	3315	65 28 19	3304	64 04 12	3293	62 39 52	3280
22	Antares W.	88 01 18	2909	89 33 25	2896	91 05 49	2883	92 38 30	2869
	SUN E.	55 34 28	3214	54 08 36	3201	52 42 28	3187	51 16 03	3172
23	Antares W.	100 26 16	2801	102 00 43	2787	103 35 28	2772	105 10 32	2759
	SUN E.	43 59 29	3096	42 31 15	3080	41 02 41	3065	39 33 49	3049
24	Antares W.	113 10 27	2690	114 47 20	2676	116 24 32	2663	118 02 01	2649
	SUN E.	32 04 36	2970	30 33 46	2956	29 02 38	2940	27 31 10	2925
25	SUN E.	19 49 12	2857	18 15 58	2845	16 42 29	2835	15 08 47	2825
28	SUN W.	19 08 48	2578	20 48 13	2568	22 27 52	2561	24 07 41	2555
	Regulus E.	92 09 09	2266	90 22 20	2260	88 35 22	2254	86 48 16	2250
29	SUN W.	32 28 49	2530	34 09 21	2526	35 49 58	2522	37 30 40	2521
	Regulus E.	77 51 10	2232	76 03 30	2230	74 15 47	2228	72 28 01	2227
	MARS E.	107 25 37	2189	105 36 53	2187	103 48 06	2185	101 59 16	2184
30	SUN W.	45 54 37	2517	47 35 26	2517	49 16 15	2518	50 57 03	2520
	Regulus E.	63 28 54	2227	61 41 06	2228	59 53 20	2229	58 05 36	2231
	MARS E.	92 54 51	2184	91 05 59	2185	89 17 09	2186	87 28 21	2188

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S					Sidereal Time of Semi-diameter Passing Meridian.	Equation of Time, to be Subtracted from Apparent Time.	Diff. for 1 Hour.
		Apparent Right Ascension.	Diff. for 1 Hour.	Apparent Declination.	Diff. for 1 Hour.	Semi-diameter.			
		h m s	s	° ' "	"	' "	s	m s	s
Frid.	1	2 30 05.77	+ 9.526	N. 14 47 57.7	+ 45.94	15 54.05	65.96	2 51.11	0.330
Sat.	2	2 33 54.62	9.547	15 06 12.9	45.32	15 53.82	66.04	2 58.80	0.309
SUN.	3	2 37 44.00	9.569	15 24 13.1	44.69	15 53.59	66.12	3 05.96	0.287
Mon.	4	2 41 33.89	+ 9.591	15 41 50.0	+ 44.05	15 53.37	66.20	3 12.61	0.265
Tues.	5	2 45 24.32	9.613	15 59 27.3	43.39	15 53.15	66.28	3 18.72	0.243
Wed.	6	2 49 15.28	9.636	16 16 40.6	42.72	15 52.92	66.36	3 24.29	0.220
Thur.	7	2 53 06.79	+ 9.658	16 33 37.6	+ 42.04	15 52.70	66.44	3 29.32	0.198
Frid.	8	2 56 58.85	9.681	16 50 18.2	41.34	15 52.48	66.52	3 33.80	0.175
Sat.	9	3 00 51.47	9.705	17 06 41.9	40.63	15 52.26	66.60	3 37.73	0.151
SUN.	10	3 04 44.66	+ 9.728	17 22 48.5	+ 39.91	15 52.05	66.68	3 41.09	0.128
Mon.	11	3 08 38.41	9.752	17 38 37.7	39.18	15 51.83	66.76	3 43.88	0.104
Tues.	12	3 12 32.74	9.776	17 54 09.2	38.44	15 51.62	66.85	3 46.10	0.080
Wed.	13	3 16 27.65	+ 9.800	18 09 22.8	+ 37.68	15 51.41	66.93	3 47.75	0.056
Thur.	14	3 20 23.14	9.825	18 24 18.0	36.92	15 51.20	67.01	3 48.81	0.031
Frid.	15	3 24 19.22	9.849	18 38 54.8	36.14	15 51.00	67.09	3 49.28	0.007
Sat.	16	3 28 15.88	+ 9.874	18 53 12.7	+ 35.35	15 50.79	67.18	3 49.17	0.017
SUN.	17	3 32 13.13	9.899	19 07 11.6	34.55	15 50.59	67.26	3 48.49	0.042
Mon.	18	3 36 10.96	9.923	19 20 51.1	33.74	15 50.39	67.34	3 47.21	0.066
Tues.	19	3 40 09.37	+ 9.947	19 34 11.0	+ 32.91	15 50.19	67.41	3 45.37	0.090
Wed.	20	3 44 08.35	9.970	19 47 11.0	32.08	15 50.00	67.49	3 42.94	0.113
Thur.	21	3 48 07.91	9.994	19 59 50.9	31.23	15 49.81	67.57	3 39.95	0.137
Frid.	22	3 52 08.03	+ 10.017	20 12 10.3	+ 30.38	15 49.63	67.65	3 36.39	0.160
Sat.	23	3 56 08.70	10.040	20 24 09.2	29.51	15 49.45	67.72	3 32.29	0.183
SUN.	24	4 00 09.92	10.062	20 35 47.1	28.64	15 49.28	67.80	3 27.63	0.205
Mon.	25	4 04 11.66	+ 10.084	20 47 03.8	+ 27.75	15 49.10	67.87	3 22.46	0.227
Tues.	26	4 08 13.92	10.105	20 57 59.2	26.86	15 48.93	67.94	3 16.77	0.248
Wed.	27	4 12 16.69	10.126	21 08 32.9	25.95	15 48.77	68.01	3 10.58	0.269
Thur.	28	4 16 19.94	+ 10.145	21 18 44.8	+ 25.03	15 48.61	68.08	3 03.91	0.288
Frid.	29	4 20 23.65	10.164	21 28 34.6	24.11	15 48.46	68.14	2 56.78	0.307
Sat.	30	4 24 27.80	10.183	21 38 02.1	23.18	15 48.32	68.20	2 49.20	0.326
SUN.	31	4 28 32.40	10.200	21 47 07.1	22.23	15 48.19	68.27	2 41.18	0.343
Mon.	32	4 32 37.40	+ 10.217	N. 21 55 49.4	+ 21.28	15 48.05	68.33	2 32.76	0.360

NOTE.—The mean time of semidiameter passing the meridian may be found by subtracting 0.18^s from the sidereal time.
The sign + prefixed to the hourly change of declination indicates that north declinations are increasing.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S				Equation of Time, to be Added to Mean Time.	Diff. for 1 Hour.	Sidereal Time, or Right Ascension of Mean Sun.
		Apparent Right Ascension.	Diff. for 1 Hour.	Apparent Declination.	Diff. for 1 Hour.			
		h m s	s	° ' "	"	m s	s	h m s
Frid.	1	2 30 06.23	+ 9.526	N.14 47 59.9	+ 45.94	2 51.13	+ 0.330	2 32 57.36
Sat.	2	2 33 55.10	9.547	15 06 15.2	45.32	2 58.82	0.309	2 36 53.92
SUN.	3	2 37 44.49	9.569	15 24 15.4	44.69	3 05.98	0.287	2 40 50.47
Mon.	4	2 41 34.40	+ 9.591	15 42 00.4	+ 44.05	3 12.62	+ 0.265	2 44 47.02
Tues.	5	2 45 24.85	9.613	15 59 29.7	43.39	3 18.73	0.243	2 48 43.58
Wed.	6	2 49 15.83	9.636	16 16 43.0	42.72	3 24.30	0.220	2 52 40.13
Thur.	7	2 53 07.36	+ 9.658	16 33 40.1	+ 42.04	3 29.33	+ 0.198	2 56 36.69
Frid.	8	2 56 59.43	9.681	16 50 20.7	41.34	3 33.81	0.175	3 00 33.24
Sat.	9	3 00 52.06	9.705	17 06 44.4	40.63	3 37.74	0.151	3 04 29.80
SUN.	10	3 04 45.25	+ 9.728	17 22 51.0	+ 39.91	3 41.10	+ 0.128	3 08 26.35
Mon.	11	3 08 39.01	9.752	17 38 40.2	39.18	3 43.89	0.104	3 12 22.90
Tues.	12	3 12 33.35	9.776	17 54 11.6	38.44	3 46.11	0.080	3 16 19.46
Wed.	13	3 16 28.27	+ 9.800	18 09 25.2	+ 37.68	3 47.75	+ 0.056	3 20 16.02
Thur.	14	3 20 23.76	9.825	18 24 20.4	36.92	3 48.81	0.031	3 24 12.57
Frid.	15	3 24 19.85	9.849	18 38 57.1	36.14	3 49.27	+ 0.007	3 28 09.12
Sat.	16	3 28 16.51	+ 9.873	18 53 15.0	+ 35.35	3 49.17	- 0.017	3 32 05.68
SUN.	17	3 32 13.75	9.898	19 07 13.8	34.55	3 48.49	0.042	3 36 02.24
Mon.	18	3 36 11.58	9.922	19 20 53.2	33.74	3 47.21	0.066	3 39 58.79
Tues.	19	3 40 09.99	+ 9.946	19 34 13.1	+ 32.91	3 45.36	- 0.090	3 43 55.35
Wed.	20	3 44 08.97	9.969	19 47 13.0	32.08	3 42.93	0.113	3 47 51.90
Thur.	21	3 48 08.52	9.993	19 59 52.8	31.23	3 39.94	0.137	3 51 48.46
Frid.	22	3 52 08.63	+ 10.016	20 12 12.2	+ 30.38	3 36.38	- 0.160	3 55 45.01
Sat.	23	3 56 09.29	10.039	20 24 10.9	29.51	3 32.28	0.183	3 59 41.57
SUN.	24	4 00 10.50	10.061	20 35 48.7	28.64	3 27.62	0.205	4 03 38.12
Mon.	25	4 04 12.23	+ 10.083	20 47 05.4	+ 27.75	3 22.45	- 0.227	4 07 34.68
Tues.	26	4 08 14.48	10.104	20 58 00.6	26.86	3 16.76	0.248	4 11 31.24
Wed.	27	4 12 17.22	10.125	21 08 34.3	25.95	3 10.57	0.269	4 15 27.79
Thur.	28	4 16 20.45	+ 10.144	21 18 46.1	+ 25.03	3 03.90	- 0.288	4 19 24.35
Frid.	29	4 20 24.14	10.163	21 28 35.8	24.11	2 56.76	0.307	4 23 20.90
Sat.	30	4 24 28.28	10.182	21 38 03.2	23.18	2 49.18	0.326	4 27 17.46
SUN.	31	4 28 32.85	10.199	21 47 08.1	22.23	2 41.16	0.343	4 31 14.01
Mon.	32	4 32 37.83	+ 10.216	N.21 55 50.4	+ 21.28	2 32.74	- 0.360	4 35 10.57

NOTE.—The semidiameter for mean noon may be assumed the same as that for apparent noon.
The sign + prefixed to the hourly change of declination indicates that north declinations are increasing.

Diff. for 1 Hour.
+ 9.8565.
(Table III.)

AT GREENWICH MEAN NOON.								
Day of the Month.	Day of the Year.	THE SUN'S				Logarithm of the Radius Vector of the Earth.	Diff. for 1 Hour.	Mean Time of Sidereal Noon.
		TRUE LONGITUDE.		Diff. for 1 Hour.	LATITUDE.			
		λ	λ'					
1	121	39 56 28.6	56 08.7	+145.58	— 0.50	0.003 3797	+ 44.5	21 23 31.79
2	122	40 54 41.6	54 21.6	145.50	0.51	0.003 4858	43.9	21 19 35.88
3	123	41 52 52.6	52 32.5	145.42	0.49	0.003 5905	43.4	21 15 39.97
4	124	42 51 01.5	50 41.3	+145.33	— 0.43	0.003 6941	+ 42.9	21 11 44.06
5	125	43 49 08.5	48 48.1	145.25	0.34	0.003 7965	42.5	21 07 48.15
6	126	44 47 13.4	46 52.9	145.17	0.23	0.003 8980	42.1	21 03 52.24
7	127	45 45 16.4	44 55.8	+145.09	— 0.10	0.003 9986	+ 41.7	20 59 56.34
8	128	46 43 17.6	42 56.9	145.01	+ 0.04	0.004 0983	41.4	20 56 00.43
9	129	47 41 17.0	40 56.1	144.94	0.18	0.004 1974	41.1	20 52 04.52
10	130	48 39 14.6	38 53.6	+144.87	+ 0.32	0.004 2957	+ 40.8	20 48 08.61
11	131	49 37 10.6	36 49.5	144.80	0.45	0.004 3933	40.5	20 44 12.70
12	132	50 35 05.0	34 43.8	144.74	0.56	0.004 4901	40.2	20 40 16.79
13	133	51 32 58.0	32 36.7	+144.68	+ 0.65	0.004 5862	+ 39.9	20 36 20.88
14	134	52 30 49.6	30 28.1	144.62	0.70	0.004 6814	39.5	20 32 24.98
15	135	53 28 39.8	28 18.2	144.57	0.74	0.004 7756	39.1	20 28 29.07
16	136	54 26 28.8	26 07.0	+144.51	+ 0.76	0.004 8688	+ 38.6	20 24 33.16
17	137	55 24 16.5	23 54.6	144.46	0.75	0.004 9608	38.1	20 20 37.25
18	138	56 22 03.0	21 40.9	144.41	0.71	0.005 0516	37.6	20 16 41.34
19	139	57 19 48.4	19 26.2	+144.37	+ 0.65	0.005 1411	+ 37.0	20 12 45.43
20	140	58 17 32.6	17 10.3	144.32	0.56	0.005 2290	36.3	20 08 49.52
21	141	59 15 15.8	14 53.4	144.28	0.45	0.005 3154	35.6	20 04 53.61
22	142	60 12 58.0	12 35.4	+144.23	+ 0.33	0.005 4000	+ 34.9	20 00 57.70
23	143	61 10 39.0	10 16.3	144.19	0.20	0.005 4827	34.1	19 57 01.79
24	144	62 08 19.1	7 56.2	144.14	+ 0.07	0.005 5633	33.2	19 53 05.88
25	145	63 05 58.0	5 35.0	+144.10	— 0.05	0.005 6418	+ 32.2	19 49 09.97
26	146	64 03 35.8	3 12.7	144.05	0.16	0.005 7180	31.3	19 45 14.06
27	147	65 01 12.5	0 49.2	144.00	0.23	0.005 7919	30.3	19 41 18.15
28	148	65 58 48.0	58 24.6	+143.95	— 0.27	0.005 8635	+ 29.3	19 37 22.24
29	149	66 56 22.2	55 58.6	143.90	0.29	0.005 9327	28.4	19 33 26.33
30	150	67 53 55.1	53 31.4	143.84	0.28	0.005 9997	27.4	19 29 30.42
31	151	68 51 26.6	51 02.8	143.79	0.23	0.006 0645	26.6	19 25 34.51
32	152	69 48 56.9	48 32.9	+143.73	— 0.16	0.006 1273	+ 25.8	19 21 38.60

NOTE.—The longitudes in the column λ are referred to the true equinox of their own date, while those in the column λ' are referred to the mean equinox of the beginning of the Besselian fictitious year.

Diff. for 1 Hour,
— 9.8296".
(Table II.)

GREENWICH MEAN TIME. .

THE MOON'S

Day of the Month.	SEMI- DIAMETER.		HORIZONTAL PARALLAX.				UPPER TRANSIT.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 Hour.	Midnight.	Diff. for 1 Hour.	Meridian of Greenwich.	Diff. for 1 Hour.	Noon.
	" "	" "	" "	" "	" "	" "	h m	m	d
1	16 17.8	16 17.1	59 42.5	- 0.09	59 40.1	- 0.28	3 46.0	+ 2.45	3.9
2	16 15.9	16 14.3	59 35.8	0.43	59 29.7	0.57	4 44.3	2.39	4.9
3	16 12.2	16 09.8	59 22.1	0.69	59 13.2	0.78	5 40.9	2.30	5.9
4	16 07.1	16 04.1	59 03.3	- 0.87	58 52.4	- 0.93	6 35.1	+ 2.21	6.9
5	16 00.9	15 57.6	58 40.8	0.99	58 28.5	1.04	7 27.1	2.13	7.9
6	15 54.1	15 50.5	58 15.8	1.08	58 02.5	1.12	8 17.4	2.07	8.9
7	15 46.8	15 43.0	57 48.9	- 1.15	57 34.8	- 1.18	9 06.5	+ 2.03	9.9
8	15 39.0	15 35.0	57 20.5	1.21	57 05.8	1.23	9 55.1	2.02	10.9
9	15 31.0	15 26.9	56 50.8	1.25	56 35.8	1.26	10 43.6	2.02	11.9
10	15 22.7	15 18.6	56 20.6	- 1.26	56 05.5	- 1.25	11 32.3	+ 2.03	12.9
11	15 14.6	15 10.6	55 50.5	1.23	55 35.9	1.20	12 21.4	2.05	13.9
12	15 06.7	15 03.0	55 21.8	1.15	55 08.4	1.08	13 10.7	2.05	14.9
13	14 59.6	14 56.5	54 55.8	- 1.00	54 44.3	- 0.90	13 59.7	+ 2.03	15.9
14	14 53.7	14 51.4	54 34.1	0.78	54 25.4	0.65	14 48.2	2.00	16.9
15	14 49.5	14 48.0	54 18.5	0.50	54 13.3	- 0.34	15 35.7	1.96	17.9
16	14 47.2	14 47.0	54 10.2	- 0.16	54 09.3	+ 0.02	16 22.1	+ 1.91	18.9
17	14 47.3	14 48.4	54 10.8	+ 0.22	54 14.6	0.42	17 07.4	1.87	19.9
18	14 50.1	14 52.5	54 20.9	0.63	54 29.8	0.84	17 52.0	1.85	20.9
19	14 55.6	14 59.4	54 41.2	+ 1.05	54 55.1	+ 1.25	18 36.2	+ 1.85	21.9
20	15 03.9	15 08.9	55 11.4	1.45	55 30.0	1.59	19 20.7	1.88	22.9
21	15 14.6	15 20.7	55 50.6	1.80	56 13.2	1.94	20 06.3	1.94	23.9
22	15 27.3	15 34.1	56 37.2	+ 2.05	57 02.4	+ 2.13	20 53.7	+ 2.03	24.9
23	15 41.2	15 48.3	57 28.4	2.17	57 54.6	2.16	21 43.7	2.15	25.9
24	15 55.4	16 02.2	58 20.5	2.12	58 45.5	2.02	22 36.8	2.28	26.9
25	16 08.6	16 14.5	59 09.1	+ 1.88	59 30.6	+ 1.69	23 33.3	+ 2.41	27.9
26	16 19.7	16 24.0	59 49.6	1.45	60 05.4	1.18	0 0		28.9
27	16 27.4	16 29.8	60 17.9	0.88	60 26.7	+ 0.57	0 32.6	2.51	0.5
28	16 31.1	16 31.4	60 31.6	+ 0.25	60 32.7	- 0.07	1 33.5	+ 2.54	1.5
29	16 30.7	16 29.0	60 30.0	- 0.37	60 23.8	0.64	2 34.4	2.51	2.5
30	16 26.5	16 23.2	60 14.5	0.89	60 02.4	1.10	3 33.7	2.42	3.5
31	16 19.3	16 14.8	59 48.0	1.28	59 31.8	1.41	4 30.4	2.30	4.5
32	16 10.0	16 04.9	59 14.1	- 1.51	58 55.5	- 1.58	5 24.2	+ 2.19	5.5

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
FRIDAY 1.					SUNDAY 3.				
0	h m s	"	° ' "	"	0	h m s	"	° ' "	"
1	6 10 02.48	+ 2.5887	N. 18 20 11.7	- 1.388	1	8 09 00.74	+ 2.4081	N. 14 59 03.5	- 6.726
2	6 12 34.17	2.5277	18 18 44.7	1.513	2	8 11 25.12	2.4045	14 52 17.2	6.818
3	6 15 05.80	2.5266	18 17 10.2	1.637	3	8 13 49.28	2.4009	14 45 25.4	6.908
4	6 17 37.36	2.5254	18 15 28.3	1.760	4	8 16 13.23	2.3974	14 38 28.2	6.998
5	6 20 08.85	2.5241	18 13 39.0	1.884	5	8 18 36.97	2.3938	14 31 25.6	7.087
6	6 22 40.25	2.5227	18 11 42.2	2.008	6	8 21 00.49	2.3903	14 24 17.8	7.174
7	6 25 11.57	2.5213	18 09 38.1	2.130	7	8 23 23.80	2.3867	14 17 04.7	7.261
8	6 27 42.80	2.5198	18 07 26.6	2.252	8	8 25 46.89	2.3830	14 09 46.5	7.346
9	6 30 13.94	2.5183	18 05 07.8	2.374	9	8 28 09.76	2.3793	14 02 23.2	7.430
10	6 32 44.99	2.5166	18 02 41.7	2.497	10	8 30 32.41	2.3758	13 54 54.9	7.513
11	6 35 15.93	2.5148	18 00 08.2	2.618	11	8 32 54.85	2.3722	13 47 21.6	7.596
12	6 37 46.77	2.5131	17 57 27.5	2.738	12	8 35 17.07	2.3685	13 39 43.4	7.678
13	6 40 17.50	2.5112	17 54 39.6	2.858	13	8 37 39.07	2.3648	13 32 00.3	7.758
14	6 42 48.11	2.5093	17 51 44.5	2.978	14	8 40 00.85	2.3613	13 24 12.5	7.837
15	6 45 18.61	2.5073	17 48 42.2	3.098	15	8 42 22.42	2.3576	13 16 19.9	7.916
16	6 47 48.98	2.5052	17 45 32.7	3.218	16	8 44 43.76	2.3539	13 08 22.6	7.993
17	6 50 19.23	2.5030	17 42 16.1	3.335	17	8 47 04.89	2.3503	13 00 20.8	8.068
18	6 52 49.34	2.5008	17 38 52.5	3.452	18	8 49 25.80	2.3467	12 52 14.4	8.143
19	6 55 19.32	2.4986	17 35 21.9	3.569	19	8 51 46.49	2.3430	12 44 03.6	8.217
20	6 57 49.17	2.4963	17 31 44.2	3.686	20	8 54 06.96	2.3393	12 35 48.4	8.290
21	7 00 18.87	2.4938	17 27 59.6	3.802	21	8 56 27.21	2.3358	12 27 28.8	8.362
22	7 02 48.43	2.4914	17 24 08.0	3.917	22	8 58 47.25	2.3322	12 19 05.0	8.433
23	7 05 17.84	2.4888	17 20 09.6	4.031	23	9 01 07.07	2.3285	12 10 36.9	8.502
24	7 07 47.09	+ 2.4863	N. 17 16 04.3	- 4.145	24	9 03 26.67	+ 2.3249	N. 12 02 04.7	- 8.570
SATURDAY 2.					MONDAY 4.				
0	7 10 16.19	+ 2.4837	N. 17 11 52.2	- 4.258	0	9 05 46.06	+ 2.3213	N. 11 53 28.5	- 8.638
1	7 12 45.13	2.4810	17 07 33.4	4.370	1	9 08 05.23	2.3178	11 44 48.2	8.704
2	7 15 13.91	2.4783	17 03 07.8	4.482	2	9 10 24.19	2.3143	11 36 04.0	8.769
3	7 17 42.53	2.4756	16 58 35.6	4.593	3	9 12 42.94	2.3108	11 27 15.9	8.833
4	7 20 10.98	2.4727	16 53 56.7	4.703	4	9 15 01.48	2.3072	11 18 24.0	8.897
5	7 22 39.25	2.4698	16 49 11.3	4.812	5	9 17 19.80	2.3036	11 09 28.3	8.959
6	7 25 07.35	2.4669	16 44 19.3	4.921	6	9 19 37.91	2.3001	11 00 28.9	9.020
7	7 27 35.28	2.4640	16 39 20.8	5.028	7	9 21 55.81	2.2967	10 51 25.9	9.080
8	7 30 03.03	2.4609	16 34 15.9	5.135	8	9 24 13.51	2.2932	10 42 19.3	9.139
9	7 32 30.59	2.4578	16 29 04.6	5.242	9	9 26 30.99	2.2897	10 33 09.2	9.197
10	7 34 57.97	2.4548	16 23 46.9	5.347	10	9 28 48.27	2.2863	10 23 55.7	9.253
11	7 37 25.17	2.4517	16 18 23.0	5.451	11	9 31 05.34	2.2828	10 14 38.8	9.309
12	7 39 52.17	2.4484	16 12 52.8	5.554	12	9 33 22.21	2.2795	10 05 18.6	9.363
13	7 42 18.98	2.4452	16 07 16.5	5.657	13	9 35 38.88	2.2762	9 55 55.2	9.417
14	7 44 45.60	2.4420	16 01 34.0	5.759	14	9 37 55.35	2.2728	9 46 28.6	9.469
15	7 47 12.02	2.4388	15 55 45.4	5.860	15	9 40 11.62	2.2695	9 36 58.9	9.520
16	7 49 38.25	2.4354	15 49 50.8	5.960	16	9 42 27.69	2.2663	9 27 26.2	9.570
17	7 52 04.27	2.4321	15 43 50.2	6.059	17	9 44 43.57	2.2630	9 17 50.5	9.619
18	7 54 30.10	2.4288	15 37 43.7	6.158	18	9 46 59.25	2.2598	9 08 11.9	9.668
19	7 56 55.72	2.4253	15 31 31.3	6.255	19	9 49 14.74	2.2566	8 58 30.4	9.715
20	7 59 21.14	2.4219	15 25 13.1	6.351	20	9 51 30.04	2.2534	8 48 46.1	9.761
21	8 01 46.35	2.4184	15 18 49.2	6.446	21	9 53 45.15	2.2503	8 38 59.1	9.805
22	8 04 11.35	2.4150	15 12 19.6	6.541	22	9 56 00.07	2.2471	8 29 09.5	9.848
23	8 06 36.15	2.4116	15 05 44.3	6.634	23	9 58 14.80	2.2440	8 19 17.3	9.891
24	8 09 00.74	+ 2.4081	N. 14 59 03.5	- 6.726	24	10 00 29.35	+ 2.2410	N. 8 09 22.6	- 9.933

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
TUESDAY 5.					THURSDAY 7.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
0	10 00 29.35	+ 2.2410	N. 8 09 22.6	- 9.933	0	11 45 13.25	+ 2.1378	S. 0 15 23.1	- 10.710
1	10 02 43.72	2.2379	7 59 25.4	9.973	1	11 47 21.48	2.1365	0 26 05.5	10.703
2	10 04 57.90	2.2349	7 49 25.8	10.013	2	11 49 29.63	2.1353	0 36 47.4	10.694
3	10 07 11.91	2.2320	7 39 23.9	10.051	3	11 51 37.72	2.1343	0 47 28.8	10.684
4	10 09 25.74	2.2291	7 29 19.7	10.088	4	11 53 45.75	2.1333	0 58 09.5	10.673
5	10 11 39.40	2.2262	7 19 13.3	10.124	5	11 55 53.71	2.1322	1 08 49.6	10.662
6	10 13 52.88	2.2233	7 09 04.8	10.159	6	11 58 01.61	2.1312	1 19 28.9	10.648
7	10 16 06.20	2.2205	6 58 54.2	10.193	7	12 00 09.45	2.1303	1 30 07.4	10.635
8	10 18 19.34	2.2177	6 48 41.6	10.227	8	12 02 17.24	2.1294	1 40 45.1	10.621
9	10 20 32.32	2.2150	6 38 27.0	10.258	9	12 04 24.98	2.1285	1 51 21.9	10.606
10	10 22 45.14	2.2123	6 28 10.6	10.288	10	12 06 32.66	2.1276	2 01 57.8	10.589
11	10 24 57.80	2.2096	6 17 52.4	10.318	11	12 08 40.29	2.1268	2 12 32.6	10.571
12	10 27 10.29	2.2069	6 07 32.4	10.348	12	12 10 47.87	2.1260	2 23 06.3	10.553
13	10 29 22.63	2.2043	5 57 10.7	10.376	13	12 12 55.41	2.1253	2 33 38.9	10.534
14	10 31 34.81	2.2018	5 46 47.3	10.403	14	12 15 02.90	2.1246	2 44 10.4	10.515
15	10 33 46.84	2.1992	5 36 22.4	10.428	15	12 17 10.36	2.1239	2 54 40.7	10.494
16	10 35 58.71	2.1967	5 25 56.0	10.453	16	12 19 17.77	2.1233	3 05 09.7	10.473
17	10 38 10.44	2.1943	5 15 28.1	10.477	17	12 21 25.15	2.1227	3 15 37.4	10.450
18	10 40 22.02	2.1918	5 04 58.8	10.499	18	12 23 32.49	2.1221	3 26 03.7	10.426
19	10 42 33.46	2.1895	4 54 28.2	10.520	19	12 25 39.80	2.1216	3 36 28.5	10.402
20	10 44 44.76	2.1872	4 43 56.4	10.541	20	12 27 47.08	2.1211	3 46 51.9	10.377
21	10 46 55.92	2.1848	4 33 23.3	10.561	21	12 29 54.33	2.1206	3 57 13.7	10.350
22	10 49 06.94	2.1826	4 22 49.1	10.579	22	12 32 01.55	2.1202	4 07 33.9	10.323
23	10 51 17.83	+ 2.1803	N. 4 12 13.8	- 10.597	23	12 34 08.75	+ 2.1198	S. 4 17 52.5	- 10.296
WEDNESDAY 6.					FRIDAY 8.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
0	10 53 28.58	+ 2.1781	N. 4 01 37.5	- 10.613	0	12 36 15.93	+ 2.1194	S. 4 28 09.4	- 10.267
1	10 55 39.20	2.1760	3 51 00.2	10.628	1	12 38 23.08	2.1191	4 38 24.5	10.237
2	10 57 49.70	2.1739	3 40 22.1	10.643	2	12 40 30.22	2.1188	4 48 37.8	10.207
3	11 00 00.07	2.1718	3 29 43.1	10.657	3	12 42 37.34	2.1185	4 58 49.3	10.176
4	11 02 10.32	2.1698	3 19 03.3	10.669	4	12 44 44.44	2.1183	5 08 58.9	10.143
5	11 04 20.45	2.1678	3 08 22.8	10.680	5	12 46 51.53	2.1181	5 19 06.5	10.110
6	11 06 30.46	2.1659	2 57 41.7	10.690	6	12 48 58.61	2.1178	5 29 12.1	10.077
7	11 08 40.36	2.1640	2 47 00.0	10.700	7	12 51 05.67	2.1177	5 39 15.7	10.043
8	11 10 50.14	2.1622	2 36 17.7	10.708	8	12 53 12.73	2.1176	5 49 17.2	10.007
9	11 12 59.82	2.1603	2 25 35.0	10.716	9	12 55 19.78	2.1175	5 59 16.5	9.970
10	11 15 09.38	2.1585	2 14 51.8	10.723	10	12 57 26.83	2.1174	6 09 13.6	9.933
11	11 17 18.84	2.1568	2 04 08.3	10.727	11	12 59 33.87	2.1174	6 19 08.5	9.895
12	11 19 28.19	2.1550	1 53 24.6	10.731	12	13 01 40.92	2.1174	6 29 01.0	9.856
13	11 21 37.44	2.1534	1 42 40.6	10.736	13	13 03 47.96	2.1173	6 38 51.2	9.817
14	11 23 46.60	2.1518	1 31 56.3	10.738	14	13 05 55.00	2.1174	6 48 39.0	9.776
15	11 25 55.66	2.1503	1 21 12.0	10.739	15	13 08 02.05	2.1175	6 58 24.3	9.735
16	11 28 04.63	2.1487	1 10 27.6	10.740	16	13 10 09.10	2.1176	7 08 07.2	9.693
17	11 30 13.50	2.1471	0 59 43.2	10.740	17	13 12 16.16	2.1177	7 17 47.5	9.651
18	11 32 22.28	2.1457	0 48 58.8	10.738	18	13 14 23.22	2.1178	7 27 25.3	9.608
19	11 34 30.98	2.1443	0 38 14.6	10.736	19	13 16 30.29	2.1179	7 37 00.4	9.563
20	11 36 39.60	2.1429	0 27 30.5	10.733	20	13 18 37.37	2.1181	7 46 32.8	9.518
21	11 38 48.13	2.1415	0 16 46.6	10.729	21	13 20 44.46	2.1183	7 56 02.5	9.473
22	11 40 56.58	2.1402	N. 0 06 03.0	10.724	22	13 22 51.57	2.1185	8 05 29.5	9.426
23	11 43 04.95	2.1389	S. 0 04 40.3	10.718	23	13 24 58.68	2.1187	8 14 53.6	9.378
24	11 45 13.25	+ 2.1378	S. 0 15 23.1	- 10.710	24	13 27 05.81	+ 2.1190	S. 8 24 14.8	- 9.329

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
SATURDAY 9.					MONDAY 11.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
0	13 27 05.81	+ 2.1190	S. 8 24 14.8	- 9.329	0	15 09 19.81	+ 2.1423	S. 14 43 21.9	- 6.229
1	13 29 12.96	2.1193	8 33 33.1	9.281	1	15 11 28.36	2.1428	14 49 33.3	6.151
2	13 31 20.12	2.1196	8 42 48.5	9.232	2	15 13 36.94	2.1432	14 55 40.0	6.072
3	13 33 27.31	2.1199	8 52 00.9	9.181	3	15 15 45.54	2.1436	15 01 41.9	5.992
4	13 35 34.51	2.1202	9 01 10.2	9.129	4	15 17 54.17	2.1441	15 07 39.0	5.913
5	13 37 41.73	2.1206	9 10 16.4	9.077	5	15 20 02.83	2.1444	15 13 31.4	5.833
6	13 39 48.98	2.1209	9 19 19.5	9.025	6	15 22 11.50	2.1448	15 19 19.0	5.753
7	13 41 56.24	2.1213	9 28 19.4	8.972	7	15 24 20.20	2.1452	15 25 01.7	5.671
8	13 44 03.53	2.1217	9 37 16.1	8.918	8	15 26 28.92	2.1456	15 30 39.5	5.590
9	13 46 10.84	2.1221	9 46 09.5	8.863	9	15 28 37.67	2.1459	15 36 12.5	5.509
10	13 48 18.18	2.1225	9 54 59.6	8.808	10	15 30 46.43	2.1463	15 41 40.6	5.427
11	13 50 25.54	2.1229	10 03 46.4	8.751	11	15 32 55.22	2.1466	15 47 03.7	5.343
12	13 52 32.93	2.1234	10 12 29.7	8.693	12	15 35 04.02	2.1468	15 52 21.8	5.261
13	13 54 40.35	2.1238	10 21 09.6	8.636	13	15 37 12.84	2.1471	15 57 35.0	5.178
14	13 56 47.79	2.1243	10 29 46.0	8.578	14	15 39 21.67	2.1473	16 02 43.2	5.094
15	13 58 55.26	2.1248	10 38 18.9	8.518	15	15 41 30.52	2.1477	16 07 46.3	5.010
16	14 01 02.77	2.1253	10 46 48.2	8.459	16	15 43 39.39	2.1479	16 12 44.4	4.927
17	14 03 10.30	2.1258	10 55 14.0	8.399	17	15 45 48.27	2.1481	16 17 37.5	4.843
18	14 05 17.86	2.1263	11 03 36.1	8.338	18	15 47 57.16	2.1482	16 22 25.5	4.758
19	14 07 25.45	2.1268	11 11 54.5	8.275	19	15 50 06.06	2.1484	16 27 08.4	4.673
20	14 09 33.07	2.1273	11 20 09.2	8.213	20	15 52 14.97	2.1486	16 31 46.2	4.587
21	14 11 40.73	2.1279	11 28 20.1	8.151	21	15 54 23.89	2.1487	16 36 18.8	4.501
22	14 13 48.42	2.1283	11 36 27.3	8.088	22	15 56 32.81	2.1487	16 40 46.3	4.415
23	14 15 56.13	+ 2.1288	S. 11 44 30.6	- 8.023	23	15 58 41.74	+ 2.1489	S. 16 45 08.6	- 4.329
SUNDAY 10.					TUESDAY 12.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
0	14 18 03.88	+ 2.1294	S. 11 52 30.0	- 7.958	0	16 00 50.68	+ 2.1490	S. 16 49 25.8	- 4.243
1	14 20 11.66	2.1300	12 00 25.5	7.892	1	16 02 59.62	2.1490	16 53 37.8	4.156
2	14 22 19.48	2.1306	12 08 17.0	7.826	2	16 05 08.56	2.1490	16 57 44.5	4.069
3	14 24 27.33	2.1312	12 16 04.6	7.759	3	16 07 17.50	2.1490	17 01 46.1	3.982
4	14 26 35.22	2.1318	12 23 48.1	7.692	4	16 09 26.44	2.1489	17 05 42.4	3.894
5	14 28 43.14	2.1323	12 31 27.6	7.624	5	16 11 35.37	2.1488	17 09 33.4	3.807
6	14 30 51.09	2.1328	12 39 03.0	7.556	6	16 13 44.30	2.1488	17 13 19.2	3.719
7	14 32 59.07	2.1333	12 46 34.3	7.487	7	16 15 53.22	2.1487	17 16 59.7	3.632
8	14 35 07.09	2.1339	12 54 01.4	7.417	8	16 18 02.14	2.1486	17 20 35.0	3.543
9	14 37 15.14	2.1345	13 01 24.3	7.347	9	16 20 11.05	2.1483	17 24 04.9	3.455
10	14 39 23.23	2.1351	13 08 43.0	7.276	10	16 22 19.94	2.1482	17 27 29.6	3.367
11	14 41 31.35	2.1356	13 15 57.4	7.203	11	16 24 28.83	2.1480	17 30 49.0	3.278
12	14 43 39.50	2.1362	13 23 07.4	7.132	12	16 26 37.70	2.1478	17 34 03.0	3.189
13	14 45 47.69	2.1368	13 30 13.2	7.060	13	16 28 46.56	2.1475	17 37 11.7	3.100
14	14 47 55.91	2.1373	13 37 14.6	6.987	14	16 30 55.40	2.1472	17 40 15.0	3.011
15	14 50 04.16	2.1378	13 44 11.6	6.913	15	16 33 04.22	2.1468	17 43 13.0	2.922
16	14 52 12.44	2.1383	13 51 04.2	6.839	16	16 35 13.02	2.1465	17 46 05.6	2.833
17	14 54 20.75	2.1388	13 57 52.3	6.765	17	16 37 21.80	2.1462	17 48 52.9	2.743
18	14 56 29.10	2.1394	14 04 36.0	6.690	18	16 39 30.56	2.1458	17 51 34.8	2.653
19	14 58 37.48	2.1399	14 11 15.1	6.614	19	16 41 39.29	2.1453	17 54 11.3	2.563
20	15 00 45.89	2.1403	14 17 49.7	6.538	20	16 43 47.99	2.1448	17 56 42.4	2.474
21	15 02 54.32	2.1408	14 24 19.7	6.462	21	16 45 56.67	2.1444	17 59 08.2	2.385
22	15 05 02.79	2.1413	14 30 45.1	6.384	22	16 48 05.32	2.1439	18 01 28.6	2.295
23	15 07 11.28	2.1418	14 37 05.8	6.307	23	16 50 13.94	2.1434	18 03 43.6	2.205
24	15 09 19.81	+ 2.1423	S. 14 43 21.9	- 6.229	24	16 52 22.53	+ 2.1428	S. 18 05 53.2	- 2.115

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
WEDNESDAY 13.					FRIDAY 15.				
0	h m s		° ' "	"	0	h m s		° ' "	"
0	16 52 22.53	+ 2.1428	S. 18 05 53.2	- 2.115	0	18 34 05.64	+ 2.0865	S. 18 04 57.4	+ 2.098
1	16 54 31.08	2.1423	18 07 57.4	2.025	1	18 36 10.78	2.0849	18 02 49.0	2.181
2	16 56 39.60	2.1417	18 09 56.2	1.936	2	18 38 15.83	2.0832	18 00 35.7	2.263
3	16 58 48.08	2.1410	18 11 49.7	1.846	3	18 40 20.77	2.0815	17 58 17.4	2.346
4	17 00 56.52	2.1403	18 13 37.7	1.755	4	18 42 25.61	2.0798	17 55 54.2	2.428
5	17 03 04.92	2.1396	18 15 20.3	1.665	5	18 44 30.34	2.0781	17 53 26.1	2.509
6	17 05 13.27	2.1388	18 16 57.5	1.575	6	18 46 34.98	2.0764	17 50 53.1	2.591
7	17 07 21.58	2.1382	18 18 29.3	1.486	7	18 48 39.51	2.0747	17 48 15.2	2.673
8	17 09 29.85	2.1374	18 19 55.8	1.396	8	18 50 43.94	2.0729	17 45 32.4	2.753
9	17 11 38.07	2.1366	18 21 16.8	1.306	9	18 52 48.26	2.0711	17 42 44.8	2.833
10	17 13 46.24	2.1358	18 22 32.5	1.217	10	18 54 52.47	2.0693	17 39 52.4	2.913
11	17 15 54.36	2.1349	18 23 42.8	1.127	11	18 56 56.58	2.0677	17 36 55.2	2.993
12	17 18 02.43	2.1340	18 24 47.7	1.037	12	18 59 00.59	2.0659	17 33 53.3	3.072
13	17 20 10.44	2.1331	18 25 47.2	0.947	13	19 01 04.49	2.0641	17 30 46.6	3.152
14	17 22 18.40	2.1322	18 26 41.3	0.857	14	19 03 08.28	2.0623	17 27 35.1	3.230
15	17 24 26.30	2.1313	18 27 30.0	0.768	15	19 05 11.96	2.0605	17 24 19.0	3.308
16	17 26 34.15	2.1303	18 28 13.4	0.678	16	19 07 15.54	2.0587	17 20 58.1	3.387
17	17 28 41.93	2.1292	18 28 51.4	0.588	17	19 09 19.00	2.0568	17 17 32.6	3.464
18	17 30 49.65	2.1282	18 29 24.0	0.499	18	19 11 22.36	2.0551	17 14 02.4	3.542
19	17 32 57.31	2.1271	18 29 51.3	0.410	19	19 13 25.61	2.0533	17 10 27.6	3.619
20	17 35 04.90	2.1260	18 30 13.2	0.321	20	19 15 28.75	2.0515	17 06 48.1	3.696
21	17 37 12.43	2.1249	18 30 29.8	0.233	21	19 17 31.79	2.0497	17 03 04.1	3.772
22	17 39 19.89	2.1238	18 30 41.1	0.144	22	19 19 34.71	2.0478	16 59 15.5	3.848
23	17 41 27.28	+ 2.1226	S. 18 30 47.1	- 0.055	23	19 21 37.53	+ 2.0461	S. 16 55 22.4	+ 3.923
THURSDAY 14.					SATURDAY 16.				
0	h m s		° ' "	"	0	h m s		° ' "	"
0	17 43 34.60	+ 2.1214	S. 18 30 47.7	+ 0.034	0	19 23 40.24	+ 2.0443	S. 16 51 24.7	+ 3.999
1	17 45 41.85	2.1202	18 30 43.0	0.123	1	19 25 42.84	2.0424	16 47 22.5	4.073
2	17 47 49.02	2.1189	18 30 33.0	0.210	2	19 27 45.33	2.0406	16 43 15.9	4.148
3	17 49 56.12	2.1177	18 30 17.8	0.298	3	19 29 47.71	2.0388	16 39 04.8	4.222
4	17 52 03.14	2.1164	18 29 57.2	0.387	4	19 31 49.98	2.0369	16 34 49.3	4.295
5	17 54 10.09	2.1151	18 29 31.4	0.473	5	19 33 52.14	2.0352	16 30 29.4	4.368
6	17 56 16.95	2.1138	18 29 00.4	0.561	6	19 35 54.20	2.0334	16 26 05.1	4.442
7	17 58 23.74	2.1124	18 28 24.1	0.649	7	19 37 56.15	2.0316	16 21 36.4	4.514
8	18 00 30.44	2.1110	18 27 42.5	0.736	8	19 39 57.99	2.0298	16 17 03.4	4.587
9	18 02 37.06	2.1097	18 26 55.8	0.823	9	19 41 59.72	2.0279	16 12 26.0	4.658
10	18 04 43.60	2.1083	18 26 03.8	0.910	10	19 44 01.34	2.0262	16 07 44.4	4.729
11	18 06 50.05	2.1068	18 25 06.6	0.996	11	19 46 02.86	2.0244	16 02 58.5	4.801
12	18 08 56.41	2.1053	18 24 04.3	1.082	12	19 48 04.27	2.0227	15 58 08.3	4.872
13	18 11 02.69	2.1039	18 22 56.8	1.168	13	19 50 05.58	2.0209	15 53 13.9	4.942
14	18 13 08.88	2.1024	18 21 44.1	1.254	14	19 52 06.78	2.0191	15 48 15.3	5.011
15	18 15 14.98	2.1009	18 20 26.3	1.339	15	19 54 07.87	2.0173	15 43 12.6	5.080
16	18 17 20.99	2.0993	18 19 03.4	1.424	16	19 56 08.86	2.0157	15 38 05.7	5.150
17	18 19 26.90	2.0978	18 17 35.4	1.509	17	19 58 09.75	2.0140	15 32 54.6	5.218
18	18 21 32.72	2.0963	18 16 02.3	1.594	18	20 00 10.54	2.0123	15 27 39.5	5.286
19	18 23 38.45	2.0947	18 14 24.1	1.679	19	20 02 11.23	2.0106	15 22 20.3	5.354
20	18 25 44.08	2.0931	18 12 40.8	1.763	20	20 04 11.81	2.0088	15 16 57.0	5.422
21	18 27 49.62	2.0915	18 10 52.5	1.848	21	20 06 12.29	2.0072	15 11 29.7	5.488
22	18 29 55.06	2.0898	18 08 59.1	1.931	22	20 08 12.67	2.0056	15 05 58.4	5.555
23	18 32 00.40	2.0882	18 07 00.8	2.014	23	20 10 12.96	2.0040	15 00 23.1	5.621
24	18 34 05.64	+ 2.0865	S. 18 04 57.4	+ 2.098	24	20 12 13.15	+ 2.0023	S. 14 54 43.9	+ 5.687

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
SUNDAY 17.					TUESDAY 19.				
0	20 12 13.15	+ 2.0023	S. 14 54 43.9	+ 5.687	0	21 46 51.84	+ 1.9520	S. 9 14 02.0	+ 8.343
1	20 14 13.24	2.0007	14 49 00.7	5.752	1	21 48 48.95	1.9517	9 05 40.1	8.388
2	20 16 13.23	1.9991	14 43 13.7	5.817	2	21 50 46.04	1.9514	8 57 15.5	8.433
3	20 18 13.13	1.9975	14 37 22.7	5.882	3	21 52 43.12	1.9513	8 48 48.2	8.476
4	20 20 12.93	1.9959	14 31 27.9	5.946	4	21 54 40.19	1.9511	8 40 18.4	8.518
5	20 22 12.64	1.9944	14 25 29.2	6.010	5	21 56 37.25	1.9509	8 31 46.0	8.562
6	20 24 12.26	1.9929	14 19 26.7	6.073	6	21 58 34.30	1.9508	8 23 11.0	8.604
7	20 26 11.79	1.9913	14 13 20.5	6.135	7	22 00 31.35	1.9508	8 14 33.5	8.646
8	20 28 11.22	1.9898	14 07 10.5	6.198	8	22 02 28.40	1.9508	8 05 53.5	8.688
9	20 30 10.57	1.9884	14 00 56.8	6.259	9	22 04 25.45	1.9509	7 57 11.0	8.728
10	20 32 09.83	1.9869	13 54 39.4	6.322	10	22 06 22.51	1.9510	7 48 26.1	8.768
11	20 34 09.00	1.9855	13 48 18.2	6.383	11	22 08 19.57	1.9511	7 39 38.8	8.808
12	20 36 08.09	1.9841	13 41 53.4	6.443	12	22 10 16.64	1.9513	7 30 49.2	8.847
13	20 38 07.09	1.9828	13 35 25.0	6.503	13	22 12 13.72	1.9514	7 21 57.2	8.887
14	20 40 06.02	1.9814	13 28 53.0	6.563	14	22 14 10.81	1.9517	7 13 02.8	8.925
15	20 42 04.86	1.9800	13 22 17.4	6.623	15	22 16 07.92	1.9520	7 04 06.2	8.963
16	20 44 03.62	1.9787	13 15 38.2	6.683	16	22 18 05.05	1.9523	6 55 07.3	9.001
17	20 46 02.30	1.9774	13 08 55.5	6.741	17	22 20 02.20	1.9528	6 46 06.1	9.038
18	20 48 00.91	1.9762	13 02 09.3	6.799	18	22 21 59.38	1.9532	6 37 02.7	9.074
19	20 49 59.44	1.9749	12 55 19.6	6.857	19	22 23 56.58	1.9536	6 27 57.2	9.109
20	20 51 57.90	1.9737	12 48 26.5	6.914	20	22 25 53.81	1.9542	6 18 49.6	9.145
21	20 53 56.28	1.9724	12 41 29.9	6.971	21	22 27 51.08	1.9548	6 09 39.8	9.181
22	20 55 54.59	1.9713	12 34 30.0	7.028	22	22 29 48.38	1.9553	6 00 27.9	9.215
23	20 57 52.84	+ 1.9703	S. 12 27 26.6	+ 7.084	23	22 31 45.72	+ 1.9559	S. 5 51 14.0	+ 9.248
MONDAY 18.					WEDNESDAY 20.				
0	20 59 51.02	+ 1.9691	S. 12 20 19.9	+ 7.139	0	22 33 43.09	+ 1.9566	S. 5 41 58.1	+ 9.282
1	21 01 49.13	1.9680	12 13 09.9	7.194	1	22 35 40.51	1.9574	5 32 40.2	9.315
2	21 03 47.18	1.9670	12 05 56.6	7.249	2	22 37 37.98	1.9582	5 23 20.3	9.348
3	21 05 45.17	1.9659	11 58 40.0	7.303	3	22 39 35.49	1.9589	5 13 58.4	9.380
4	21 07 43.09	1.9649	11 51 20.2	7.358	4	22 41 33.05	1.9598	5 04 34.7	9.411
5	21 09 40.96	1.9640	11 43 57.1	7.411	5	22 43 30.67	1.9608	4 55 09.1	9.442
6	21 11 38.77	1.9631	11 36 30.9	7.463	6	22 45 28.35	1.9618	4 45 41.7	9.473
7	21 13 36.53	1.9622	11 29 01.5	7.517	7	22 47 26.08	1.9628	4 36 12.4	9.503
8	21 15 34.23	1.9613	11 21 28.9	7.568	8	22 49 23.88	1.9639	4 26 41.4	9.531
9	21 17 31.88	1.9604	11 13 53.3	7.620	9	22 51 21.75	1.9650	4 17 08.7	9.559
10	21 19 29.48	1.9597	11 06 14.5	7.672	10	22 53 19.68	1.9661	4 07 34.3	9.588
11	21 21 27.04	1.9588	10 58 32.7	7.723	11	22 55 17.68	1.9673	3 57 58.2	9.616
12	21 23 24.54	1.9580	10 50 47.8	7.773	12	22 57 15.76	1.9687	3 48 20.4	9.643
13	21 25 22.00	1.9574	10 42 59.9	7.823	13	22 59 13.92	1.9699	3 38 41.0	9.669
14	21 27 19.43	1.9568	10 35 09.0	7.873	14	23 01 12.15	1.9713	3 29 00.1	9.695
15	21 29 16.81	1.9561	10 27 15.2	7.922	15	23 03 10.47	1.9728	3 19 17.6	9.721
16	21 31 14.16	1.9555	10 19 18.4	7.971	16	23 05 08.88	1.9742	3 09 33.6	9.746
17	21 33 11.47	1.9549	10 11 18.7	8.018	17	23 07 07.37	1.9756	2 59 48.1	9.770
18	21 35 08.75	1.9543	10 03 16.2	8.066	18	23 09 05.95	1.9772	2 50 01.2	9.793
19	21 37 05.99	1.9538	9 55 10.8	8.114	19	23 11 04.63	1.9788	2 40 12.9	9.816
20	21 39 03.21	1.9534	9 47 02.5	8.161	20	23 13 03.41	1.9805	2 30 23.3	9.838
21	21 41 00.40	1.9530	9 38 51.5	8.207	21	23 15 02.29	1.9822	2 20 32.3	9.860
22	21 42 57.57	1.9526	9 30 37.7	8.253	22	23 17 01.27	1.9839	2 10 40.1	9.881
23	21 44 54.71	1.9523	9 22 21.2	8.298	23	23 19 00.36	1.9857	2 00 46.6	9.903
24	21 46 51.84	+ 1.9520	S. 9 14 02.0	+ 8.343	24	23 20 59.55	+ 1.9875	S. 1 50 51.8	+ 9.923

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
THURSDAY 21.					SATURDAY 23.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
1	23 20 59.55	+ 1.9875	S. 1 50 51.8	+ 9.983	1	0 59 29.02	+ 2.1352	N. 6 15 04.0	+ 10.019
2	23 22 58.86	1.9895	1 40 55.9	9.942	2	1 01 37.26	2.1395	6 25 04.6	10.000
3	23 24 58.29	1.9914	1 30 58.8	9.961	3	1 03 45.76	2.1438	6 35 04.0	9.980
4	23 26 57.83	1.9934	1 21 00.6	9.978	4	1 05 54.51	2.1480	6 45 02.2	9.959
5	23 28 57.50	1.9955	1 11 01.4	9.995	5	1 08 03.52	2.1524	6 54 59.1	9.937
6	23 30 57.29	1.9976	1 01 01.2	10.013	6	1 10 12.80	2.1569	7 04 54.6	9.913
7	23 32 57.21	1.9998	0 50 59.9	10.029	7	1 12 22.35	2.1613	7 14 48.7	9.889
8	23 34 57.26	2.0019	0 40 57.7	10.044	8	1 14 32.16	2.1658	7 24 41.3	9.863
9	23 36 57.44	2.0042	0 30 54.6	10.059	9	1 16 42.24	2.1703	7 34 32.3	9.838
10	23 38 57.76	2.0065	0 20 50.6	10.073	10	1 18 52.59	2.1748	7 44 21.8	9.811
11	23 40 58.22	2.0088	0 10 45.8	10.086	11	1 21 03.22	2.1795	7 54 09.6	9.782
12	23 42 58.82	2.0113	S. 0 00 40.3	10.099	12	1 23 14.13	2.1841	8 03 55.6	9.752
13	23 44 59.57	2.0137	N. 0 09 26.1	10.112	13	1 25 25.31	2.1887	8 13 39.8	9.721
14	23 47 00.46	2.0162	0 19 33.2	10.123	14	1 27 36.77	2.1934	8 23 22.1	9.689
15	23 49 01.51	2.0188	0 29 40.9	10.133	15	1 29 48.52	2.1982	8 33 02.5	9.657
16	23 51 02.72	2.0214	0 39 49.2	10.143	16	1 32 00.56	2.2030	8 42 40.9	9.623
17	23 53 04.08	2.0240	0 49 58.1	10.153	17	1 34 12.88	2.2078	8 52 17.2	9.588
18	23 55 05.60	2.0268	1 00 07.6	10.162	18	1 36 25.49	2.2126	9 01 51.4	9.551
19	23 57 07.29	2.0295	1 10 17.5	10.169	19	1 38 38.39	2.2175	9 11 23.3	9.513
20	23 59 09.14	2.0323	1 20 27.9	10.176	20	1 40 51.59	2.2224	9 20 53.0	9.475
21	0 01 11.17	2.0352	1 30 38.6	10.182	21	1 43 05.08	2.2273	9 30 20.3	9.435
22	0 03 13.37	2.0381	1 40 49.7	10.188	22	1 45 18.87	2.2323	9 39 45.2	9.394
23	0 05 15.74	2.0410	1 51 01.1	10.193	23	1 47 32.95	2.2373	9 49 07.6	9.352
	0 07 18.29	+ 2.0440	N. 2 01 12.8	+ 10.197		1 49 47.34	+ 2.2423	N. 9 58 27.5	+ 9.309
FRIDAY 22.					SUNDAY 24.				
0	0 09 21.02	+ 2.0471	N. 2 11 24.7	+ 10.199	0	1 52 02.02	+ 2.2473	N. 10 07 44.7	+ 9.264
1	0 11 23.94	2.0503	2 21 36.7	10.202	1	1 54 17.01	2.2523	10 16 59.2	9.218
2	0 13 27.05	2.0534	2 31 48.9	10.203	2	1 56 32.30	2.2574	10 26 10.9	9.172
3	0 15 30.35	2.0566	2 42 01.1	10.204	3	1 58 47.90	2.2625	10 35 19.8	9.124
4	0 17 33.84	2.0599	2 52 13.4	10.205	4	2 01 03.80	2.2677	10 44 25.8	9.075
5	0 19 37.54	2.0633	3 02 25.7	10.203	5	2 03 20.02	2.2728	10 53 28.8	9.024
6	0 21 41.43	2.0666	3 12 37.8	10.201	6	2 05 36.54	2.2779	11 02 28.7	8.972
7	0 23 45.53	2.0700	3 22 49.8	10.199	7	2 07 53.37	2.2831	11 11 25.4	8.918
8	0 25 49.83	2.0734	3 33 01.7	10.196	8	2 10 10.51	2.2883	11 20 18.9	8.865
9	0 27 54.34	2.0769	3 43 13.3	10.192	9	2 12 27.96	2.2935	11 29 09.2	8.810
10	0 29 59.06	2.0805	3 53 24.7	10.187	10	2 14 45.73	2.2987	11 37 56.1	8.753
11	0 32 04.00	2.0841	4 03 35.7	10.180	11	2 17 03.81	2.3039	11 46 39.6	8.695
12	0 34 09.15	2.0878	4 13 46.3	10.173	12	2 19 22.20	2.3092	11 55 19.5	8.635
13	0 36 14.53	2.0915	4 23 56.5	10.166	13	2 21 40.91	2.3144	12 03 55.8	8.575
14	0 38 20.13	2.0952	4 34 06.2	10.158	14	2 23 59.93	2.3197	12 12 28.5	8.514
15	0 40 25.95	2.0990	4 44 15.4	10.148	15	2 26 19.27	2.3249	12 20 57.5	8.451
16	0 42 32.01	2.1028	4 54 23.9	10.137	16	2 28 38.92	2.3302	12 29 22.6	8.386
17	0 44 38.29	2.1067	5 04 31.8	10.126	17	2 30 58.89	2.3354	12 37 43.8	8.321
18	0 46 44.81	2.1107	5 14 39.0	10.113	18	2 33 19.17	2.3407	12 46 01.1	8.254
19	0 48 51.57	2.1147	5 24 45.4	10.100	19	2 35 39.77	2.3460	12 54 14.3	8.186
20	0 50 58.57	2.1187	5 34 51.0	10.086	20	2 38 00.69	2.3512	13 02 23.4	8.117
21	0 53 05.81	2.1228	5 44 55.7	10.071	21	2 40 21.92	2.3564	13 10 28.3	8.046
22	0 55 13.30	2.1269	5 54 59.5	10.055	22	2 42 43.46	2.3616	13 18 28.9	7.974
23	0 57 21.04	2.1310	6 05 02.3	10.038	23	2 45 05.31	2.3668	13 26 25.2	7.902
24	0 59 29.02	+ 2.1352	N. 6 15 04.0	+ 10.019	24	2 47 27.48	+ 2.3722	N. 13 34 17.1	+ 7.828

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
MONDAY 25.					WEDNESDAY 27.				
0	2 47 27.48	+ 2.3722	N. 13 34 17.1	+ 7.828	0	4 46 45.19	+ 2.5773	N. 18 01 15.3	+ 2.879
1	2 49 49.97	2.3774	13 42 04.5	7.752	1	4 49 19.91	2.5800	18 04 04.3	2.753
2	2 52 12.77	2.3826	13 49 47.3	7.674	2	4 51 54.79	2.5825	18 06 45.7	2.626
3	2 54 35.88	2.3878	13 57 25.4	7.596	3	4 54 29.81	2.5848	18 09 19.4	2.498
4	2 56 59.31	2.3930	14 04 58.8	7.517	4	4 57 04.97	2.5872	18 11 45.4	2.369
5	2 59 23.04	2.3982	14 12 27.4	7.436	5	4 59 40.27	2.5893	18 14 03.7	2.240
6	3 01 47.09	2.4033	14 19 51.1	7.353	6	5 02 15.69	2.5913	18 16 14.2	2.111
7	3 04 11.44	2.4084	14 27 09.8	7.270	7	5 04 51.23	2.5933	18 18 17.0	1.982
8	3 06 36.10	2.4136	14 34 23.5	7.186	8	5 07 26.89	2.5953	18 20 12.0	1.851
9	3 09 01.07	2.4187	14 41 32.1	7.101	9	5 10 02.66	2.5970	18 21 59.1	1.719
10	3 11 26.34	2.4237	14 48 35.6	7.014	10	5 12 38.53	2.5987	18 23 38.3	1.588
11	3 13 51.91	2.4287	14 55 33.8	6.925	11	5 15 14.50	2.6002	18 25 09.7	1.457
12	3 16 17.78	2.4337	15 02 26.6	6.835	12	5 17 50.55	2.6016	18 26 33.1	1.324
13	3 18 43.95	2.4387	15 09 14.0	6.745	13	5 20 26.69	2.6030	18 27 48.6	1.193
14	3 21 10.42	2.4437	15 15 56.0	6.653	14	5 23 02.91	2.6043	18 28 56.2	1.060
15	3 23 37.19	2.4486	15 22 32.4	6.559	15	5 25 39.20	2.6054	18 29 55.8	0.927
16	3 26 04.25	2.4534	15 29 03.1	6.465	16	5 28 15.56	2.6064	18 30 47.4	0.793
17	3 28 31.60	2.4582	15 35 28.2	6.370	17	5 30 51.97	2.6073	18 31 31.0	0.660
18	3 30 59.23	2.4629	15 41 47.5	6.273	18	5 33 28.43	2.6081	18 32 06.6	0.526
19	3 33 27.15	2.4677	15 48 00.9	6.174	19	5 36 04.94	2.6088	18 32 34.1	0.392
20	3 35 55.35	2.4723	15 54 08.4	6.075	20	5 38 41.49	2.6094	18 32 53.6	0.258
21	3 38 23.83	2.4770	16 00 09.9	5.975	21	5 41 18.07	2.6098	18 33 05.1	+ 0.124
22	3 40 52.59	2.4816	16 06 05.4	5.874	22	5 43 54.67	2.6102	18 33 08.5	- 0.010
23	3 43 21.62	+ 2.4861	N. 16 11 54.8	+ 5.772	23	5 46 31.29	+ 2.6105	N. 18 33 03.9	- 0.144
TUESDAY 26.					THURSDAY 28.				
0	3 45 50.92	+ 2.4906	N. 16 17 38.0	+ 5.668	0	5 49 07.93	+ 2.6107	N. 18 32 51.2	- 0.278
1	3 48 20.49	2.4950	16 23 14.9	5.563	1	5 51 44.57	2.6107	18 32 30.5	0.473
2	3 50 50.32	2.4994	16 28 45.5	5.457	2	5 54 21.21	2.6106	18 32 01.7	0.547
3	3 53 20.41	2.5037	16 34 09.7	5.350	3	5 56 57.84	2.6104	18 31 24.9	0.681
4	3 55 50.76	2.5079	16 39 27.5	5.242	4	5 59 34.46	2.6102	18 30 40.0	0.815
5	3 58 21.36	2.5121	16 44 38.7	5.132	5	6 02 11.06	2.6098	18 29 47.1	0.948
6	4 00 52.21	2.5163	16 49 43.3	5.022	6	6 04 47.63	2.6092	18 28 46.2	1.082
7	4 03 23.31	2.5203	16 54 41.3	4.911	7	6 07 24.16	2.6086	18 27 37.3	1.216
8	4 05 54.65	2.5243	16 59 32.6	4.798	8	6 10 00.66	2.6080	18 26 20.3	1.349
9	4 08 26.22	2.5282	17 04 17.1	4.685	9	6 12 37.12	2.6072	18 24 55.4	1.482
10	4 10 58.03	2.5321	17 08 54.8	4.571	10	6 15 13.52	2.6062	18 23 22.5	1.615
11	4 13 30.07	2.5358	17 13 25.6	4.456	11	6 17 49.86	2.6052	18 21 41.6	1.748
12	4 16 02.33	2.5395	17 17 49.5	4.340	12	6 20 26.14	2.6040	18 19 52.8	1.879
13	4 18 34.81	2.5432	17 22 06.4	4.223	13	6 23 02.34	2.6028	18 17 56.1	2.012
14	4 21 07.51	2.5467	17 26 16.2	4.104	14	6 25 38.47	2.6015	18 15 51.4	2.143
15	4 23 40.42	2.5502	17 30 18.9	3.986	15	6 28 14.52	2.6000	18 13 38.9	2.274
16	4 26 13.53	2.5535	17 34 14.5	3.866	16	6 30 50.47	2.5984	18 11 18.5	2.405
17	4 28 46.84	2.5568	17 38 02.8	3.743	17	6 33 26.33	2.5967	18 08 50.3	2.535
18	4 31 20.35	2.5601	17 41 43.9	3.624	18	6 36 02.08	2.5950	18 06 14.3	2.664
19	4 33 54.05	2.5632	17 45 17.7	3.502	19	6 38 37.73	2.5932	18 03 30.6	2.793
20	4 36 27.93	2.5662	17 48 44.1	3.378	20	6 41 13.26	2.5913	18 00 39.1	2.922
21	4 39 01.99	2.5692	17 52 03.1	3.255	21	6 43 48.68	2.5893	17 57 39.9	3.050
22	4 41 36.23	2.5720	17 55 14.7	3.131	22	6 46 23.97	2.5871	17 54 33.1	3.178
23	4 44 10.63	2.5747	17 58 18.8	3.005	23	6 48 59.13	2.5848	17 51 18.6	3.304
24	4 46 45.19	+ 2.5773	N. 18 01 15.3	+ 2.879	24	6 51 34.15	+ 2.5825	N. 17 47 56.6	- 3.430

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
FRIDAY 29.					SUNDAY 31.				
0	6 51 34.15	+ 2.5825	N. 17 47 56.6	- 3.430	0	8 51 34.47	+ 2.4003	N. 12 54 48.1	- 8.373
1	6 54 09.03	2.5802	17 44 27.0	3.556	1	8 53 58.35	2.3957	12 46 23.4	8.448
2	6 56 43.77	2.5778	17 40 49.9	3.681	2	8 56 21.95	2.3911	12 37 54.3	8.522
3	6 59 18.36	2.5752	17 37 05.3	3.805	3	8 58 45.28	2.3866	12 29 20.8	8.595
4	7 01 52.79	2.5725	17 33 13.3	3.928	4	9 01 08.34	2.3821	12 20 42.9	8.667
5	7 04 27.06	2.5698	17 29 13.9	4.051	5	9 03 31.13	2.3775	12 12 00.8	8.736
6	7 07 01.16	2.5669	17 25 07.2	4.173	6	9 05 53.64	2.3730	12 03 14.6	8.804
7	7 09 35.09	2.5640	17 20 53.2	4.293	7	9 08 15.89	2.3685	11 54 24.3	8.872
8	7 12 08.84	2.5610	17 16 32.0	4.413	8	9 10 37.86	2.3640	11 45 30.0	8.938
9	7 14 42.41	2.5580	17 12 03.6	4.533	9	9 12 59.57	2.3595	11 36 31.8	9.003
10	7 17 15.80	2.5549	17 07 28.0	4.652	10	9 15 21.00	2.3550	11 27 29.7	9.067
11	7 19 49.00	2.5517	17 02 45.4	4.769	11	9 17 42.17	2.3505	11 18 23.8	9.129
12	7 22 22.00	2.5484	16 57 55.7	4.886	12	9 20 03.06	2.3460	11 09 14.2	9.190
13	7 24 54.81	2.5451	16 52 59.1	5.002	13	9 22 23.69	2.3417	11 00 01.0	9.250
14	7 27 27.41	2.5417	16 47 55.5	5.117	14	9 24 44.06	2.3373	10 50 44.2	9.308
15	7 29 59.81	2.5383	16 42 45.0	5.231	15	9 27 04.16	2.3328	10 41 24.0	9.365
16	7 32 32.00	2.5347	16 37 27.8	5.343	16	9 29 24.00	2.3285	10 32 00.4	9.422
17	7 35 03.97	2.5311	16 32 03.8	5.456	17	9 31 43.58	2.3241	10 22 33.4	9.478
18	7 37 35.73	2.5275	16 26 33.1	5.567	18	9 34 02.89	2.3198	10 13 03.1	9.531
19	7 40 07.27	2.5238	16 20 55.8	5.677	19	9 36 21.95	2.3155	10 03 29.7	9.583
20	7 42 38.58	2.5200	16 15 11.9	5.786	20	9 38 40.75	2.3112	9 53 53.2	9.634
21	7 45 09.67	2.5163	16 09 21.5	5.894	21	9 40 59.29	2.3069	9 44 13.6	9.685
22	7 47 40.53	2.5124	16 03 24.6	6.001	22	9 43 17.58	2.3027	9 34 31.0	9.734
23	7 50 11.16	+ 2.5084	N. 15 57 21.4	- 6.106	23	9 45 35.61	+ 2.2984	N. 9 24 45.5	- 9.781
SATURDAY 30.					MONDAY, JUNE 1.				
0	7 52 41.54	+ 2.5044	N. 15 51 11.9	- 6.211	0	9 47 53.39	+ 2.2943	N. 9 14 57.3	- 9.827
1	7 55 11.69	2.5005	15 44 56.1	6.314	PHASES OF THE MOON.				
2	7 57 41.60	2.4964	15 38 34.2	6.417					
3	8 00 11.26	2.4923	15 32 06.1	6.518					
4	8 02 40.68	2.4882	15 25 32	6.618					
5	8 05 09.85	2.4840	15 18 51.9	6.718	<div>☾ First Quarter . . . May 3 19 26.0</div> <div>☾ Full Moon 11 01 18.0</div> <div>☾ Last Quarter 19 03 18.2</div> <div>☾ New Moon 26 10 49.8</div>				
6	8 07 38.76	2.4797	15 12 05.9	6.816					
7	8 10 07.42	2.4756	15 05 14.0	6.913					
8	8 12 35.83	2.4713	14 58 16.4	7.008					
9	8 15 03.98	2.4671	14 51 13.1	7.103	<div>☾ Apogee May 16 10.9</div> <div>☾ Perigee 28 09.4</div>				
10	8 17 31.88	2.4628	14 44 04.1	7.196					
11	8 19 59.51	2.4583	14 36 49.6	7.287					
12	8 22 26.88	2.4540	14 29 29.6	7.378					
13	8 24 53.99	2.4496	14 22 04.2	7.468					
14	8 27 20.83	2.4451	14 14 33.4	7.557					
15	8 29 47.40	2.4407	14 06 57.4	7.643					
16	8 32 13.71	2.4363	13 59 16.2	7.730					
17	8 34 39.75	2.4318	13 51 29.8	7.815					
18	8 37 05.52	2.4273	13 43 38.4	7.898					
19	8 39 31.02	2.4228	13 35 42.0	7.981					
20	8 41 56.25	2.4183	13 27 40.7	8.062					
21	8 44 21.21	2.4138	13 19 34.6	8.141					
22	8 46 45.90	2.4093	13 11 23.8	8.220					
23	8 49 10.32	2.4048	13 03 08.2	8.298					
24	8 51 34.47	+ 2.4003	N. 12 54 48.1	- 8.373					

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.	Noon.	P. L. of Diff.	IIIh	P. L. of Diff.	VIh	P. L. of Diff.	IXh	P. L. of Diff.
		° ' "		° ' "		° ' "		° ' "	
1	SUN W.	52 37 49	2522	54 18 32	2524	55 59 12	2526	57 39 49	2528
	Regulus E.	56 17 54	2233	54 30 16	2236	52 42 43	2239	50 55 14	2243
	MARS E.	85 39 35	2190	83 50 53	2193	82 02 15	2196	80 13 41	2199
	Spica E.	109 49 02	2220	108 01 05	2223	106 13 11	2225	104 25 21	2228
2	SUN W.	66 01 52	2547	67 42 00	2551	69 22 03	2555	71 02 00	2560
	VENUS W.	30 40 34	2704	32 17 08	2702	33 53 45	2700	35 30 25	2698
	Regulus E.	41 59 25	2268	40 12 38	2274	38 26 00	2281	36 39 33	2288
	MARS E.	71 12 10	2218	69 24 10	2224	67 36 18	2229	65 48 33	2233
	Spica E.	95 27 13	2244	93 39 52	2248	91 52 36	2252	90 05 26	2257
3	SUN W.	79 19 56	2588	80 59 08	2593	82 38 12	2599	84 17 08	2605
	VENUS W.	43 33 41	2707	45 10 12	2710	46 46 38	2713	48 23 00	2717
	MARS E.	56 51 49	2263	55 04 55	2269	53 18 10	2276	51 31 35	2283
	Spica E.	81 11 25	2283	79 25 00	2288	77 38 43	2294	75 52 35	2300
	Antares E.	126 26 55	2354	124 42 14	2357	122 57 37	2360	121 13 05	2363
4	SUN W.	92 29 36	2639	94 07 38	2646	95 45 31	2652	97 23 15	2660
	VENUS W.	56 23 17	2744	57 58 59	2750	59 34 33	2756	61 10 00	2762
	Pollux W.	25 58 29	2832	27 32 11	2785	29 06 59	2745	30 42 41	2712
	MARS E.	42 41 16	2320	40 55 45	2328	39 10 26	2336	37 25 19	2344
	Spica E.	67 04 05	2331	65 18 51	2337	63 33 46	2344	61 48 51	2351
	Antares E.	112 31 40	2384	110 47 42	2389	109 03 52	2394	107 20 09	2399
5	SUN W.	105 29 27	2696	107 06 12	2704	108 42 46	2718	110 19 10	2719
	VENUS W.	69 05 05	2795	70 39 39	2802	72 14 04	2809	73 48 20	2817
	Pollux W.	38 49 50	2617	40 28 22	2607	42 07 07	2600	43 46 02	2595
	MARS E.	28 42 56	2393	26 59 11	2405	25 15 43	2416	23 32 31	2429
	Spica E.	53 06 43	2387	51 22 49	2394	49 39 04	2401	47 55 30	2408
	Antares E.	98 43 36	2430	97 00 44	2436	95 18 01	2443	93 35 28	2450
6	SUN W.	118 18 37	2759	119 53 59	2768	121 29 09	2775	123 04 09	2783
	VENUS W.	81 37 13	2855	83 10 30	2863	84 43 36	2871	86 16 32	2879
	Pollux W.	52 01 54	2585	53 41 09	2586	55 20 23	2587	56 59 36	2589
	Spica E.	39 20 24	2448	37 37 57	2456	35 55 41	2464	34 13 37	2473
	Antares E.	85 05 09	2486	83 23 36	2494	81 42 14	2502	80 01 03	2510
7	VENUS W.	93 58 35	2921	95 30 27	2930	97 02 08	2939	98 33 38	2948
	Pollux W.	65 14 38	2608	66 53 22	2613	68 31 59	2618	70 10 29	2624
	Regulus W.	28 18 12	2547	29 58 20	2550	31 38 24	2553	33 18 23	2558
	Antares E.	71 37 59	2552	69 57 57	2561	68 18 09	2570	66 38 33	2579
	α Aquilæ E.	119 52 59	3038	118 23 32	3028	116 53 55	3021	115 24 08	3015
8	VENUS W.	106 08 13	2994	107 38 33	3004	109 08 40	3014	110 38 35	3024
	Pollux W.	78 20 57	2657	79 58 35	2663	81 36 04	2671	83 13 23	2679
	Regulus W.	41 36 36	2586	43 15 50	2593	44 54 55	2599	46 33 51	2607
	Antares E.	58 23 50	2630	56 45 36	2641	55 07 37	2652	53 29 53	2664
	α Aquilæ E.	107 53 52	3003	106 23 43	3004	104 53 35	3005	103 23 29	3007
	SATURN E.	119 06 40	2589	117 27 30	2596	115 48 30	2604	114 09 41	2612
9	Pollux W.	91 17 14	2721	92 53 26	2731	94 29 25	2740	96 05 12	2749
	Regulus W.	54 45 58	2645	56 23 52	2653	58 01 34	2661	59 39 06	2670

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.	P. L. of Diff.	XVh	P. L. of Diff.	XVIIIh	P. L. of Diff.	XXIh	P. L. of Diff.
			° ' "		° ' "		° ' "		° ' "	
1	SUN	W.	59 20 23	2531	61 00 53	2535	62 41 17	2538	64 21 37	2542
	Regulus	E.	49 07 51	2247	47 20 34	2252	45 33 24	2257	43 46 21	2262
	MARS	E.	78 25 12	2202	76 36 48	2206	74 48 29	2210	73 00 16	2214
	Spica	E.	102 37 35	2230	100 49 52	2233	99 02 14	2237	97 14 41	2240
2	SUN	W.	72 41 50	2565	74 21 33	2571	76 01 08	2576	77 40 36	2582
	VENUS	W.	37 07 07	2699	38 43 48	2700	40 20 28	2701	41 57 06	2704
	Regulus	E.	34 53 16	2296	33 07 11	2306	31 21 20	2315	29 35 43	2325
	MARS	E.	64 00 55	2239	62 13 25	2245	60 26 05	2251	58 38 53	2257
	Spica	E.	88 18 23	2264	86 31 27	2267	84 44 39	2272	82 57 58	2277
3	SUN	W.	85 55 56	2612	87 34 34	2618	89 13 04	2625	90 51 25	2632
	VENUS	W.	49 59 17	2722	51 35 27	2728	53 11 30	2732	54 47 27	2738
	MARS	E.	49 45 10	2290	47 58 55	2298	46 12 52	2304	44 26 59	2311
	Spica	E.	74 06 35	2306	72 20 44	2312	70 35 02	2318	68 49 29	2324
	Antares	E.	119 28 37	2366	117 44 14	2370	115 59 57	2374	114 15 45	2379
4	SUN	W.	99 00 49	2667	100 38 13	2674	102 15 28	2682	103 52 32	2689
	VENUS	W.	62 45 18	2768	64 20 28	2775	65 55 29	2781	67 30 22	2788
	Pollux	W.	32 19 07	2684	33 56 08	2661	35 33 40	2643	37 11 35	2629
	MARS	E.	35 40 24	2353	33 55 42	2362	32 11 13	2371	30 26 57	2382
	Spica	E.	60 04 05	2358	58 19 30	2364	56 35 04	2371	54 50 48	2379
	Antares	E.	105 36 33	2405	103 53 06	2412	102 09 48	2417	100 26 38	2423
5	SUN	W.	111 55 24	2728	113 31 27	2735	115 07 21	2743	116 43 04	2750
	VENUS	W.	75 22 26	2825	76 56 22	2831	78 30 09	2839	80 03 46	2847
	Pollux	W.	45 25 04	2591	47 04 12	2588	48 43 24	2586	50 22 38	2585
	MARS	E.	21 49 37	2445	20 07 06	2463	18 25 00	2483	16 43 23	2505
	Spica	E.	46 12 07	2415	44 28 54	2424	42 45 53	2431	41 03 03	2439
	Antares	E.	91 53 04	2457	90 10 50	2464	88 28 46	2471	86 46 52	2479
6	SUN	W.	124 38 59	2792	126 13 37	2801	127 48 04	2809	129 22 20	2817
	VENUS	W.	87 49 18	2887	89 21 53	2895	90 54 18	2904	92 26 32	2912
	Pollux	W.	58 38 46	2593	60 17 51	2596	61 56 52	2599	63 35 48	2604
	Spica	E.	32 31 46	2482	30 50 08	2491	29 08 42	2501	27 27 30	2511
	Antares	E.	78 20 03	2518	76 39 15	2526	74 58 38	2535	73 18 13	2543
7	VENUS	W.	100 04 56	2957	101 36 03	2966	103 06 58	2976	104 37 41	2985
	Pollux	W.	71 48 52	2630	73 27 06	2636	75 05 12	2643	76 43 09	2650
	Regulus	W.	34 58 16	2563	36 38 02	2568	38 17 41	2573	39 57 13	2580
	Antares	E.	64 59 09	2589	63 19 59	2599	61 41 02	2609	60 02 19	2619
	α Aquilæ	E.	113 54 14	3010	112 24 14	3007	110 54 10	3004	109 24 02	3002
8	VENUS	W.	112 08 18	3034	113 37 48	3045	115 07 05	3055	116 36 09	3065
	Pollux	W.	84 50 31	2687	86 27 29	2695	88 04 15	2704	89 40 50	2712
	Regulus	W.	48 12 37	2614	49 51 13	2622	51 29 38	2629	53 07 53	2637
	Antares	E.	51 52 25	2676	50 15 13	2689	48 38 18	2702	47 01 41	2716
	α Aquilæ	E.	101 53 25	3011	100 23 26	3016	98 53 33	3020	97 23 45	3026
	SATURN	E.	112 31 02	2620	110 52 34	2628	109 14 18	2636	107 36 12	2644
9	Pollux	W.	97 40 47	2759	99 16 09	2769	100 51 17	2779	102 26 12	2789
	Regulus	W.	61 16 26	2679	62 53 34	2687	64 30 31	2696	66 07 16	2705

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.	Noon.	P. L. of Diff.	IIIh	P. L. of Diff.	VIh	P. L. of Diff.	IXh	P. L. of Diff.
9	MARS W.	25 49 36	2660	27 27 10	2666	29 04 36	2672	30 41 54	2679
	Antares E.	45 25 22	2731	43 49 23	2746	42 13 43	2761	40 38 24	2779
	α Aquilæ E.	95 54 04	3033	94 24 32	3040	92 55 09	3047	91 25 55	3056
	SATURN E.	105 58 17	2653	104 20 34	2662	102 43 03	2670	101 05 43	2679
10	Pollux W.	104 00 54	2800	105 35 22	2811	107 09 35	2822	108 43 34	2834
	Regulus W.	67 43 49	2714	69 20 10	2723	70 56 19	2732	72 32 16	2741
	MARS W.	38 45 51	2719	40 22 05	2728	41 58 08	2737	43 33 59	2746
	Spica W.	14 15 22	2768	15 50 32	2768	17 25 42	2769	19 00 51	2770
	Antares E.	32 47 57	2884	31 15 18	2912	29 43 14	2942	28 11 47	2975
	α Aquilæ E.	84 02 36	3108	82 34 36	3121	81 06 52	3134	79 39 23	3148
	SATURN E.	93 01 59	2784	91 25 51	2733	89 49 56	2742	88 14 12	2752
11	Regulus W.	80 28 57	2768	82 03 40	2798	83 38 10	2807	85 12 29	2817
	MARS W.	51 30 09	2794	53 04 46	2804	54 39 09	2813	56 13 21	2822
	Spica W.	26 55 27	2798	28 29 58	2805	30 04 20	2813	31 38 30	2821
	α Aquilæ E.	72 26 24	3227	71 00 47	3245	69 35 31	3265	68 10 38	3285
	SATURN E.	80 18 42	2800	78 44 14	2810	77 09 59	2819	75 35 56	2829
12	Regulus W.	93 00 56	2864	94 34 01	2874	96 06 53	2883	97 39 33	2892
	MARS W.	64 01 08	2872	65 34 03	2881	67 06 46	2891	68 39 17	2900
	Spica W.	39 26 42	2864	40 59 47	2873	42 32 41	2881	44 05 25	2890
	α Aquilæ E.	61 12 28	3400	59 50 12	3428	58 28 28	3457	57 07 16	3487
	SATURN E.	67 48 52	2878	66 16 05	2888	64 43 31	2898	63 11 09	2908
13	Regulus W.	105 19 59	2938	106 51 30	2947	108 22 49	2955	109 53 58	2964
	MARS W.	76 18 50	2947	77 50 09	2956	79 21 17	2965	80 52 14	2973
	Spica W.	51 46 15	2933	53 17 53	2942	54 49 19	2949	56 20 36	2957
	α Aquilæ E.	50 30 16	3668	49 12 55	3711	47 56 20	3759	46 40 35	3809
	SATURN E.	55 32 28	2956	54 01 20	2965	52 30 24	2975	50 59 40	2985
14	MARS W.	88 24 18	3014	89 54 12	3022	91 23 57	3029	92 53 33	3036
	Spica W.	63 54 33	2995	65 24 52	3001	66 55 03	3008	68 25 06	3014
	Antares W.	20 01 03	3422	21 22 50	3479	22 45 31	3543	24 08 56	3611
	α Aquilæ E.	40 36 16	4134	39 26 47	4217	38 18 37	4309	37 11 53	4410
	SATURN E.	43 28 57	3031	41 59 23	3041	40 30 01	3051	39 00 51	3060
15	MARS W.	100 19 29	3068	101 48 17	3073	103 16 59	3079	104 45 34	3083
	Spica W.	75 53 25	3043	77 22 44	3047	78 51 58	3052	80 21 06	3056
	Antares W.	31 13 00	3223	32 38 43	3213	34 04 37	3205	35 30 40	3198
	SATURN E.	31 37 56	3110	30 09 59	3121	28 42 15	3133	27 14 45	3145
	SUN E.	135 06 30	3415	133 44 31	3421	132 22 38	3425	131 00 50	3429
16	MARS W.	112 07 13	3103	113 35 19	3105	115 03 22	3108	116 31 22	3109
	Spica W.	87 45 37	3072	89 14 21	3074	90 43 02	3076	92 11 41	3077
	Antares W.	42 42 37	3175	44 09 16	3172	45 35 59	3168	47 02 47	3164
	α Arietis E.	105 00 09	3166	103 33 19	3167	102 06 30	3168	100 39 42	3168
	SUN E.	124 12 50	3445	122 51 24	3446	121 30 00	3448	120 08 38	3449
17	Spica W.	99 34 46	3078	101 03 23	3076	102 32 02	3073	104 00 44	3071
	Antares W.	54 17 47	3147	55 45 00	3143	57 12 17	3138	58 39 40	3134
	α Arietis E.	93 25 39	3165	91 58 48	3163	90 31 55	3161	89 04 59	3159

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LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.	P. L. of Diff.	XVh	P. L. of Diff.	XVIIIh	P. L. of Diff.	XXIh	P. L. of Diff.
			° ' "		° ' "		° ' "		° ' "	
9	MARS	W.	32 19 02	2687	33 56 00	2695	35 32 47	2702	37 09 24	2710
	Antares	E.	39 03 28	2797	37 28 56	2816	35 54 49	2837	34 21 08	2859
	α Aquilæ	E.	89 56 51	3065	88 27 59	3074	86 59 18	3085	85 30 50	3096
	SATURN	E.	99 28 34	2688	97 51 38	2696	96 14 53	2705	94 38 20	2714
10	Pollux	W.	110 17 18	2645	111 50 47	2658	113 24 00	2669	114 56 58	2681
	Regulus	W.	74 08 01	2751	75 43 33	2760	77 18 53	2769	78 54 01	2779
	MARS	W.	45 09 38	2756	46 45 05	2766	48 20 18	2774	49 55 20	2784
	Spica	W.	20 35 58	2773	22 11 02	2778	23 45 59	2784	25 20 47	2791
	Antares	E.	26 41 02	3014	25 11 06	3060	23 42 05	3110	22 14 06	3167
	α Aquilæ	E.	78 12 11	3162	76 45 16	3178	75 18 40	3193	73 52 22	3209
	SATURN	E.	86 38 41	2762	85 03 22	2771	83 28 17	2780	81 53 23	2790
11	Regulus	W.	86 46 35	2826	88 20 29	2836	89 54 10	2845	91 27 39	2855
	MARS	W.	57 47 20	2832	59 21 06	2842	60 54 39	2852	62 28 00	2862
	Spica	W.	33 12 30	2830	34 46 19	2838	36 19 58	2846	37 53 26	2855
	α Aquilæ	E.	66 46 09	3306	65 22 04	3328	63 58 25	3351	62 35 13	3375
	SATURN	E.	74 02 06	2839	72 28 28	2849	70 55 04	2859	69 21 52	2868
12	Regulus	W.	99 12 02	2902	100 44 18	2911	102 16 23	2920	103 48 17	2929
	MARS	W.	70 11 36	2910	71 43 42	2920	73 15 36	2929	74 47 19	2938
	Spica	W.	45 37 57	2898	47 10 18	2908	48 42 27	2916	50 14 26	2924
	α Aquilæ	E.	55 46 37	3519	54 26 34	3553	53 07 08	3588	51 48 21	3627
	SATURN	E.	61 39 00	2917	60 07 03	2927	58 35 20	2937	57 03 48	2946
13	Regulus	W.	111 24 56	2973	112 55 43	2981	114 26 20	2988	115 56 48	2996
	MARS	W.	82 23 00	2982	83 53 35	2991	85 23 59	2999	86 54 13	3006
	Spica	W.	57 51 43	2965	59 22 40	2973	60 53 27	2980	62 24 05	2988
	α Aquilæ	E.	45 25 42	3864	44 11 46	3924	42 58 51	3987	41 46 59	4058
	SATURN	E.	49 29 08	2994	47 58 48	3003	46 28 39	3013	44 58 42	3022
14	MARS	W.	94 23 01	3043	95 52 20	3050	97 21 30	3056	98 50 33	3062
	Spica	W.	69 55 01	3021	71 24 48	3027	72 54 27	3033	74 23 59	3038
	Antares	W.	25 32 56	3284	26 57 26	3264	28 22 20	3249	29 47 32	3235
	α Aquilæ	E.	36 06 41	4523	35 03 09	4650	34 01 27	4769	33 01 42	4946
	SATURN	E.	37 31 52	3069	36 03 05	3079	34 34 30	3089	33 06 07	3099
15	MARS	W.	106 14 04	3088	107 42 28	3092	109 10 47	3096	110 39 02	3099
	Spica	W.	81 50 09	3060	83 19 07	3064	84 48 00	3067	86 16 50	3069
	Antares	W.	36 56 51	3193	38 23 09	3188	39 49 33	3183	41 16 03	3179
	SATURN	E.	25 47 30	3160	24 20 33	3177	22 53 56	3194	21 27 40	3213
	SUN	E.	129 39 06	3433	128 17 27	3436	126 55 51	3439	125 34 19	3442
16	MARS	W.	117 59 21	3110	119 27 19	3111	120 55 15	3112	122 23 11	3113
	Spica	W.	93 40 19	3078	95 08 56	3078	96 37 32	3078	98 06 09	3078
	Antares	W.	48 29 39	3161	49 56 34	3158	51 23 34	3154	52 50 38	3150
	α Arietis	E.	99 12 54	3168	97 46 06	3168	96 19 18	3167	94 52 29	3166
	SUN	E.	118 47 17	3450	117 25 57	3451	116 04 38	3450	114 43 18	3449
17	Spica	W.	105 29 29	3069	106 58 17	3066	108 27 08	3062	109 56 04	3058
	Antares	W.	60 07 08	3130	61 34 41	3124	63 02 21	3119	64 30 07	3114
	α Arietis	E.	87 38 01	3157	86 11 00	3154	84 43 56	3151	83 16 48	3147

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Day of the Month.	Name and Direction of Object.	Noon.	P. L. of Diff.	III ^h	P. L. of Diff.	VI ^h	P. L. of Diff.	IX ^h	P. L. of Diff.
17	SUN E.	113 21 57	3448	112 00 35	3446	110 39 11	3445	109 17 45	3442
18	Spica W.	111 25 05	3054	112 54 11	3048	114 23 24	3043	115 52 43	3038
	Antares W.	65 58 00	3108	67 26 00	3102	68 54 07	3095	70 22 23	3087
	α Arietis E.	81 49 35	3143	80 22 18	3138	78 54 55	3134	77 27 27	3129
	SUN E.	102 29 41	3422	101 07 50	3416	99 45 52	3410	98 23 47	3404
19	Antares W.	77 46 02	3047	79 15 17	3038	80 44 43	3028	82 14 21	3018
	SATURN W.	17 02 41	3193	18 28 58	3158	19 55 57	3126	21 23 35	3097
	α Arietis E.	70 08 32	3101	68 40 23	3095	67 12 07	3087	65 43 42	3080
	SUN E.	91 31 22	3365	90 08 25	3355	88 45 17	3345	87 21 57	3334
20	Antares W.	89 45 48	2962	91 16 48	2950	92 48 03	2938	94 19 34	2925
	α Aquilæ W.	44 10 01	3220	45 24 43	3201	46 40 26	3205	47 57 08	3153
	SATURN W.	28 49 31	2988	30 20 01	2969	31 50 54	2950	33 22 10	2931
	α Arietis E.	58 19 25	3043	56 50 06	3036	55 20 38	3029	53 51 00	3022
	SUN E.	80 22 06	3276	78 57 26	3262	77 32 30	3249	76 07 19	3235
21	Antares W.	102 01 20	2857	103 34 34	2842	105 08 07	2828	106 41 59	2813
	α Aquilæ W.	54 33 41	3432	55 55 21	3395	57 17 43	3358	58 40 48	3322
	SATURN W.	41 04 09	2844	42 37 40	2826	44 11 34	2808	45 45 51	2792
	α Arietis E.	46 20 43	2989	44 50 17	2985	43 19 46	2981	41 49 10	2979
	SUN E.	68 57 05	3159	67 30 07	3144	66 02 51	3128	64 35 15	3110
22	α Aquilæ W.	65 45 55	3166	67 12 45	3138	68 40 09	3110	70 08 07	3082
	SATURN W.	53 43 00	2702	55 19 37	2684	56 56 38	2666	58 34 03	2648
	SUN E.	57 12 05	3025	55 42 23	3007	54 12 19	2989	52 41 53	2972
23	α Aquilæ W.	77 35 49	2962	79 06 50	2939	80 38 20	2918	82 10 16	2897
	SATURN W.	66 47 18	2558	68 27 11	2540	70 07 29	2522	71 48 12	2504
	SUN E.	45 04 06	2882	43 31 24	2865	41 58 20	2848	40 24 54	2830
24	α Aquilæ W.	89 56 15	2805	91 30 36	2789	93 05 18	2775	94 40 19	2760
	SATURN W.	80 17 58	2417	82 01 09	2401	83 44 43	2384	85 28 41	2368
	SUN E.	32 32 17	2751	30 56 44	2737	29 20 53	2723	27 44 44	2712
28	SUN W.	21 57 46	2441	23 40 23	2433	25 23 10	2427	27 06 06	2422
	Regulus E.	61 13 56	2099	59 22 56	2099	57 31 55	2100	55 40 56	2101
	MARS E.	92 09 09	2148	90 19 23	2147	88 29 36	2148	86 39 51	2149
	Spica E.	114 46 40	2090	112 55 25	2090	111 04 10	2089	109 12 54	2090
29	SUN W.	35 41 57	2417	37 25 08	2419	39 08 16	2422	40 51 20	2425
	Regulus E.	46 26 51	2118	44 36 20	2124	42 45 58	2130	40 55 45	2137
	MARS E.	77 31 44	2163	75 42 21	2168	73 53 05	2173	72 03 56	2178
	Spica E.	99 57 06	2101	98 06 09	2105	96 15 18	2110	94 24 34	2115
30	SUN W.	49 24 59	2455	51 07 16	2462	52 49 22	2470	54 31 17	2478
	MARS E.	63 00 30	2213	61 12 22	2221	59 24 26	2230	57 36 43	2239
	Spica E.	85 13 04	2147	83 23 17	2155	81 33 42	2163	79 44 19	2172
31	SUN W.	62 57 43	2527	64 38 18	2538	66 18 39	2549	67 58 44	2560
	Spica E.	70 40 50	2220	68 52 53	2231	67 05 11	2241	65 17 44	2252

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Day of the Month.	Name and Direction of Object.		Midnight.	P. L. of Diff.	XVh	P. L. of Diff.	XVIIIh	P. L. of Diff.	XXIh	P. L. of Diff.
17	SUN	E.	107 56 16	3439	106 34 44	3436	105 13 08	3431	103 51 27	3427
18	Spica	W.	117 22 09	3031	118 51 43	3024	120 21 26	3018	121 51 17	3010
	Antares	W.	71 50 48	3080	73 19 22	3073	74 48 05	3065	76 16 58	3056
	α Arietis	E.	75 59 53	3124	74 32 13	3119	73 04 27	3113	71 36 33	3107
	SUN	E.	97 01 35	3397	95 39 15	3390	94 16 47	3381	92 54 09	3373
19	Antares	W.	83 44 12	3007	85 14 16	2996	86 44 32	2985	88 15 03	2974
	SATURN	W.	22 51 48	3071	24 20 33	3047	25 49 47	3026	27 19 27	3007
	α Arietis	E.	64 15 08	3073	62 46 26	3066	61 17 35	3059	59 48 35	3051
	SUN	E.	85 58 25	3323	84 34 41	3312	83 10 43	3300	81 46 32	3288
20	Antares	W.	95 51 21	2912	97 23 25	2898	98 55 45	2884	100 28 24	2871
	α Aquilæ	W.	49 14 45	3604	50 33 15	3558	51 52 35	3513	53 12 45	3471
	SATURN	W.	34 53 49	2913	36 25 50	2896	37 58 14	2877	39 31 00	2860
	α Arietis	E.	52 21 14	3014	50 51 19	3008	49 21 16	3001	47 51 04	2994
	SUN	E.	74 41 51	3220	73 16 06	3206	71 50 04	3191	70 23 44	3175
21	Antares	W.	108 16 10	2798	109 50 40	2784	111 25 29	2769	113 00 38	2752
	α Aquilæ	W.	60 04 34	3289	61 28 58	3257	62 54 00	3225	64 19 39	3194
	SATURN	W.	47 20 30	2774	48 55 32	2756	50 30 58	2738	52 06 47	2720
	α Arietis	E.	40 18 31	2978	38 47 51	2980	37 17 13	2983	35 46 38	2987
	SUN	E.	63 07 18	3094	61 39 01	3078	60 10 24	3060	58 41 25	3043
22	α Aquilæ	W.	71 36 38	3057	73 05 40	3032	74 35 13	3008	76 05 16	2984
	SATURN	W.	60 11 53	2630	61 50 07	2612	63 28 46	2593	65 07 50	2576
	SUN	E.	51 11 05	2954	49 39 54	2936	48 08 21	2918	46 36 25	2900
23	α Aquilæ	W.	83 42 39	2877	85 15 27	2858	86 48 40	2840	88 22 16	2822
	SATURN	W.	73 29 20	2486	75 10 53	2469	76 52 50	2451	78 35 12	2434
	SUN	E.	38 51 05	2813	37 16 54	2797	35 42 22	2782	34 07 30	2766
24	α Aquilæ	W.	96 15 39	2748	97 51 16	2737	99 27 07	2725	101 03 13	2714
	SATURN	W.	87 13 02	2352	88 57 46	2337	90 42 52	2322	92 28 20	2306
	SUN	E.	26 08 18	2702	24 31 38	2693	22 54 47	2684	21 17 46	2675
28	SUN	W.	28 49 09	2418	30 32 18	2416	32 15 30	2415	33 58 44	2415
	Regulus	E.	53 49 58	2103	51 59 04	2106	50 08 14	2110	48 17 29	2114
	MARS	E.	84 50 07	2151	83 00 25	2153	81 10 47	2156	79 21 13	2159
	Spica	E.	107 21 39	2091	105 30 26	2093	103 39 16	2095	101 48 09	2098
29	SUN	W.	42 34 19	2430	44 17 11	2436	45 59 55	2441	47 42 31	2447
	Regulus	E.	39 05 43	2145	37 15 53	2154	35 26 16	2164	33 36 53	2174
	MARS	E.	70 14 55	2184	68 26 04	2190	66 37 22	2197	64 48 50	2205
	Spica	E.	92 33 57	2120	90 43 29	2127	88 53 11	2133	87 03 02	2140
30	SUN	W.	56 13 01	2487	57 54 32	2497	59 35 49	2507	61 16 53	2517
	MARS	E.	55 49 13	2249	54 01 58	2258	52 14 57	2268	50 28 11	2279
	Spica	E.	77 55 09	2181	76 06 13	2190	74 17 31	2200	72 29 03	2210
31	SUN	W.	69 38 34	2572	71 18 08	2584	72 57 25	2596	74 36 26	2607
	Spica	E.	63 30 34	2263	61 43 40	2275	59 57 04	2286	58 10 44	2298

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S					Sidereal Time of Semi-diameter Passing Meridian.	Equation of Time, to be Subtracted from		Diff. for 1 Hour.
		Apparent Right Ascension.	Diff. for 1 Hour.	Apparent Declination.	Diff. for 1 Hour.	Semi-diameter.		Added to Apparent Time.		
		^h ^m ^s	^s	[°] ['] ["]	["]	['] ["]	^s	^m ^s	^s	
Mon.	1	4 32 37.40	+ 10.217	N.21 55 49.4	+ 21.28	15 48.05	68.33	2 32.76	0.360	
Tues.	2	4 36 42.80	10.234	22 04 08.9	20.33	15 47.93	68.38	2 23.93	0.376	
Wed.	3	4 40 48.57	10.249	22 12 05.2	19.36	15 47.80	68.44	2 14.73	0.391	
Thur.	4	4 44 54.71	+ 10.264	22 19 38.3	+ 18.39	15 47.68	68.49	2 05.18	0.406	
Frid.	5	4 49 01.20	10.278	22 26 48.0	17.41	15 47.55	68.54	1 55.28	0.420	
Sat.	6	4 53 08.02	10.292	22 33 34.2	16.43	15 47.43	68.59	1 45.04	0.434	
SUN.	7	4 57 15.16	+ 10.305	22 39 56.6	+ 15.44	15 47.31	68.63	1 34.49	0.447	
Mon.	8	5 01 22.60	10.317	22 45 55.2	14.44	15 47.20	68.67	1 23.64	0.459	
Tues.	9	5 05 30.32	10.328	22 51 29.8	13.44	15 47.09	68.71	1 12.51	0.470	
Wed.	10	5 09 38.31	+ 10.339	22 56 40.3	+ 12.43	15 46.98	68.75	1 01.11	0.481	
Thur.	11	5 13 46.55	10.349	23 01 26.7	11.42	15 46.87	68.78	0 49.46	0.491	
Frid.	12	5 17 55.03	10.358	23 05 48.7	10.41	15 46.77	68.81	0 37.57	0.500	
Sat.	13	5 22 03.72	+ 10.367	23 09 46.4	+ 9.39	15 46.68	68.83	0 25.46	0.509	
SUN.	14	5 26 12.61	10.375	23 13 19.6	8.37	15 46.59	68.86	0 13.16	0.517	
Mon.	15	5 30 21.67	10.381	23 16 28.2	7.35	15 46.50	68.88	0 00.69	0.523	
Tues.	16	5 34 30.89	+ 10.388	23 19 12.2	+ 6.32	15 46.42	68.90	0 11.93	0.530	
Wed.	17	5 38 40.24	10.393	23 21 31.6	5.29	15 46.34	68.92	0 24.69	0.535	
Thur.	18	5 42 49.71	10.397	23 23 26.2	4.26	15 46.26	68.93	0 37.58	0.539	
Frid.	19	5 46 59.26	+ 10.400	23 24 56.0	+ 3.23	15 46.19	68.94	0 50.54	0.542	
Sat.	20	5 51 08.89	10.402	23 26 01.1	2.19	15 46.11	68.94	1 03.57	0.544	
SUN.	21	5 55 18.56	10.404	23 26 41.4	1.16	15 46.04	68.94	1 16.65	0.546	
Mon.	22	5 59 28.24	+ 10.404	23 26 56.8	+ 0.13	15 45.98	68.94	1 29.73	0.546	
Tues.	23	6 03 37.91	10.408	23 26 47.5	- 0.90	15 45.93	68.93	1 42.82	0.545	
Wed.	24	6 07 47.55	10.401	23 26 13.4	1.94	15 45.88	68.93	1 55.86	0.543	
Thur.	25	6 11 57.11	+ 10.397	23 25 14.5	- 2.97	15 45.83	68.92	2 08.83	0.539	
Frid.	26	6 16 06.58	10.392	23 23 50.8	4.00	15 45.79	68.90	2 21.70	0.534	
Sat.	27	6 20 15.92	10.387	23 22 02.5	5.02	15 45.77	68.88	2 34.45	0.529	
SUN.	28	6 24 25.10	+ 10.380	23 19 49.6	- 6.05	15 45.74	68.85	2 47.04	0.522	
Mon.	29	6 28 34.10	10.371	23 17 12.1	7.07	15 45.71	68.83	2 59.45	0.513	
Tues.	30	6 32 42.90	10.362	23 14 10.1	8.09	15 45.70	68.81	3 11.66	0.504	
Wed.	31	6 36 51.46	+ 10.352	N.23 10 43.6	- 9.10	15 45.70	68.78	3 23.63	0.494	

NOTE.—The mean time of semidiameter passing the meridian may be found by subtracting 0.9^s from the sidereal time. The sign + prefixed to the hourly change of declination indicates that north declinations are increasing; the sign - indicates that north declinations are decreasing.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S				Equation of Time, to be Added to		Diff. for 1 Hour.	Sidereal Time, or Right Ascension of Mean Sun.
		Apparent Right Ascension.	Diff. for 1 Hour.	Apparent Declination.	Diff. for 1 Hour.	Subtracted from Mean Time.			
Mon.	1	h m s 4 32 37.83	+ 10.216	N.21 55 50.4	+ 21.28	m s 2 32.74	- 0.360	h m s 4 35 10.57	
Tues.	2	4 36 43.20	10.232	22 04 09.7	20.33	2 23.93	0.376	4 39 07.13	
Wed.	3	4 40 48.96	10.247	22 12 05.9	19.36	2 14.72	0.391	4 43 03.68	
Thur.	4	4 44 55.07	+ 10.262	22 19 38.9	+ 18.39	2 05.17	- 0.406	4 47 00.24	
Frid.	5	4 49 01.53	10.276	22 26 48.6	17.41	1 55.27	0.420	4 50 56.80	
Sat.	6	4 53 08.32	10.290	22 33 34.6	16.43	1 45.03	0.434	4 54 53.35	
SUN.	7	4 57 15.43	+ 10.303	22 39 57.0	+ 15.44	1 34.48	- 0.447	4 58 49.91	
Mon.	8	5 01 22.83	10.315	22 45 55.5	14.44	1 23.63	0.459	5 02 46.46	
Tues.	9	5 05 30.52	10.326	22 51 30.1	13.44	1 12.50	0.470	5 06 43.02	
Wed.	10	5 09 38.48	+ 10.337	22 56 40.6	+ 12.43	1 01.10	- 0.481	5 10 39.58	
Thur.	11	5 13 46.69	10.347	23 01 26.8	11.42	0 49.45	0.491	5 14 36.14	
Frid.	12	5 17 55.13	10.356	23 05 48.8	10.41	0 37.56	0.500	5 18 32.69	
Sat.	13	5 22 03.79	+ 10.365	23 09 46.5	+ 9.39	0 25.46	- 0.509	5 22 29.25	
SUN.	14	5 26 12.64	10.373	23 13 19.6	8.37	0 13.16	0.517	5 26 25.80	
Mon.	15	5 30 21.67	10.379	23 16 28.2	7.35	0 00.69	0.523	5 30 22.36	
Tues.	16	5 34 30.85	+ 10.386	23 19 12.2	+ 6.32	0 11.93	- 0.530	5 34 18.92	
Wed.	17	5 38 40.17	10.391	23 21 31.5	5.29	0 24.69	0.535	5 38 15.48	
Thur.	18	5 42 49.60	10.395	23 23 26.1	4.26	0 37.57	0.539	5 42 12.03	
Frid.	19	5 46 59.12	+ 10.398	23 24 56.0	+ 3.23	0 50.53	- 0.542	5 46 08.59	
Sat.	20	5 51 08.71	10.400	23 26 01.1	2.19	1 03.56	0.544	5 50 05.15	
SUN.	21	5 55 18.34	10.402	23 26 41.3	1.16	1 16.64	0.546	5 54 01.70	
Mon.	22	5 59 27.98	+ 10.402	23 26 56.8	+ 0.13	1 29.72	- 0.546	5 57 58.26	
Tues.	23	6 03 37.62	10.401	23 26 47.5	- 0.90	1 42.80	0.545	6 01 54.82	
Wed.	24	6 07 47.21	10.399	23 26 13.4	1.94	1 55.84	0.543	6 05 51.37	
Thur.	25	6 11 56.74	+ 10.395	23 25 14.6	- 2.97	2 08.81	- 0.539	6 09 47.93	
Frid.	26	6 16 06.17	10.390	23 23 51.0	4.00	2 21.68	0.534	6 13 44.49	
Sat.	27	6 20 15.47	10.385	23 22 02.7	5.02	2 34.43	0.529	6 17 41.04	
SUN.	28	6 24 24.62	+ 10.378	23 19 49.8	- 6.05	2 47.02	- 0.522	6 21 37.60	
Mon.	29	6 28 33.59	10.369	23 17 12.4	7.07	2 59.43	0.513	6 25 34.16	
Tues.	30	6 32 42.34	10.360	23 14 10.5	8.09	3 11.63	0.504	6 29 30.71	
Wed.	31	6 36 50.87	+ 10.350	N.23 10 44.2	- 9.10	3 23.60	- 0.494	6 33 27.27	

NOTE.—The semidiameter for mean noon may be assumed the same as that for apparent noon.
The sign + prefixed to the hourly change of declination indicates that north declinations are increasing; the sign — indicates that north declinations are decreasing.

Diff. for 1 Hour,
+9.8565".
(Table III.)

AT GREENWICH MEAN NOON.									
Day of the Month.	Day of the Year.	THE SUN'S					Logarithm of the Radius Vector of the Earth.	Diff. for 1 Hour.	Mean Time of Sidereal Noon.
		TRUE LONGITUDE.		Diff. for 1 Hour.	LATITUDE.				
		λ	λ'						
1	152	69° 48' 56.9"	48° 32.9'	+ 143.73	— 0.16	0.006 1273	+ 25.8	19 ^h 21 ^m 38.60 ^s	
2	153	70° 46' 25.8"	46° 01.6'	143.68	— 0.05	0.006 1881	25.0	19 17 42.69	
3	154	71° 43' 53.4"	43° 29.1'	143.62	+ 0.08	0.006 2471	24.3	19 13 46.78	
4	155	72° 41' 19.8"	40° 55.3'	+ 143.57	+ 0.20	0.006 3044	+ 23.6	19 09 50.87	
5	156	73° 38' 44.9"	38° 20.3'	143.52	0.34	0.006 3602	22.9	19 05 54.96	
6	157	74° 36' 09.0"	35° 44.2'	143.48	0.48	0.006 4145	22.3	19 01 59.05	
7	158	75° 33' 31.9"	33° 06.9'	+ 143.44	+ 0.61	0.006 4674	+ 21.8	18 58 03.14	
8	159	76° 30' 53.8"	30° 28.7'	143.40	0.72	0.006 5190	21.2	18 54 07.23	
9	160	77° 28' 14.9"	27° 49.6'	143.36	0.81	0.006 5691	20.6	18 50 11.32	
10	161	78° 25' 35.1"	25° 09.7'	+ 143.33	+ 0.86	0.006 6180	+ 20.1	18 46 15.40	
11	162	79° 22' 54.6"	22° 29.0'	143.30	0.90	0.006 6655	19.5	18 42 19.50	
12	163	80° 20' 13.5"	19° 47.7'	143.27	0.93	0.006 7116	18.9	18 38 23.58	
13	164	81° 17' 31.7"	17° 05.8'	+ 143.25	+ 0.92	0.006 7562	+ 18.3	18 34 27.67	
14	165	82° 14' 49.4"	14° 23.4'	143.23	0.87	0.006 7993	17.6	18 30 31.76	
15	166	83° 12' 06.7"	11° 40.5'	143.21	0.81	0.006 8408	16.9	18 26 35.85	
16	167	84° 09' 23.6"	8° 57.2'	+ 143.20	+ 0.72	0.006 8806	+ 16.2	18 22 39.94	
17	168	85° 06' 40.2"	6° 13.6'	143.18	0.62	0.006 9187	15.5	18 18 44.03	
18	169	86° 03' 56.4"	3° 29.7'	143.17	0.50	0.006 9549	14.7	18 14 48.12	
19	170	87° 01' 12.5"	0° 45.6'	+ 143.16	+ 0.37	0.006 9891	+ 13.8	18 10 52.21	
20	171	87° 58' 28.4"	58° 01.3'	143.16	0.25	0.007 0212	12.9	18 06 56.30	
21	172	88° 55' 44.0"	55° 16.8'	143.15	0.13	0.007 0510	11.9	18 03 00.39	
22	173	89° 52' 59.6"	52° 32.2'	+ 143.14	+ 0.03	0.007 0784	+ 10.9	17 59 04.48	
23	174	90° 50' 14.9"	49° 47.3'	143.13	— 0.06	0.007 1032	9.8	17 55 08.56	
24	175	91° 47' 29.9"	47° 02.3'	143.12	0.11	0.007 1254	8.7	17 51 12.65	
25	176	92° 44' 44.8"	44° 16.9'	+ 143.11	— 0.13	0.007 1450	+ 7.6	17 47 16.74	
26	177	93° 41' 59.3"	41° 31.3'	143.10	0.13	0.007 1618	6.5	17 43 20.83	
27	178	94° 39' 13.4"	38° 45.2'	143.08	0.09	0.007 1759	5.4	17 39 24.92	
28	179	95° 36' 27.1"	35° 58.8'	+ 143.06	— 0.02	0.007 1874	+ 4.3	17 35 29.01	
29	180	96° 33' 40.5"	33° 12.0'	143.05	+ 0.07	0.007 1965	3.3	17 31 33.10	
30	181	97° 30' 53.3"	30° 24.7'	143.03	0.19	0.007 2031	2.3	17 27 37.19	
31	182	98° 28' 05.8"	27° 37.0'	+ 143.01	+ 0.32	0.007 2075	+ 1.4	17 23 41.28	
NOTE.—The longitudes in the column λ are referred to the true equinox of their own date, while those in the column λ' are referred to the mean equinox of the beginning of the Besselian fictitious year.									Diff. for 1 Hour, — 9.8296 ^s . (Table II.)

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month.	SEMI- DIAMETER.		HORIZONTAL PARALLAX.				UPPER TRANSIT.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 Hour.	Midnight.	Diff. for 1 Hour.	Meridian of Greenwich.	Diff. for 1 Hour.	
	' "	' "	' "	"	' "	"	h m	m	d
1	16 10.0	16 04.9	59 14.1	- 1.51	58 55.5	- 1.58	5 24.2	+ 2.19	5.5
2	15 59.7	15 54.4	58 36.2	1.61	58 16.8	1.62	6 15.4	2.09	6.5
3	15 49.1	15 43.9	57 57.3	1.61	57 38.1	1.58	7 04.8	2.03	7.5
4	15 38.7	15 33.8	57 19.3	- 1.54	57 01.1	- 1.49	7 53.0	+ 2.00	8.5
5	15 29.0	15 24.4	56 43.6	1.43	56 26.7	1.37	8 40.8	1.99	9.5
6	15 20.0	15 15.8	56 10.6	1.31	55 55.2	1.25	9 28.6	2.00	10.5
7	15 11.9	15 08.1	55 40.7	- 1.18	55 26.9	- 1.11	10 16.8	+ 2.02	11.5
8	15 04.6	15 01.3	55 14.0	1.04	55 01.8	0.97	11 05.5	2.03	12.5
9	14 58.2	14 55.4	54 50.6	0.90	54 40.3	0.81	11 54.3	2.03	13.5
10	14 52.9	14 50.7	54 31.1	- 0.73	54 22.9	- 0.63	12 42.8	+ 2.01	14.5
11	14 48.7	14 47.2	54 15.9	0.53	54 10.2	0.41	13 30.8	1.98	15.5
12	14 46.0	14 45.3	54 05.9	0.29	54 03.2	- 0.15	14 17.7	1.93	16.5
13	14 45.0	14 45.2	54 02.1	- 0.01	54 02.9	+ 0.14	15 03.4	+ 1.88	17.5
14	14 45.9	14 47.2	54 05.6	+ 0.31	54 10.4	0.48	15 48.1	1.84	18.5
15	14 49.1	14 51.6	54 17.3	0.67	54 26.4	0.86	16 32.0	1.82	19.5
16	14 54.8	14 58.5	54 37.9	+ 1.05	54 51.8	+ 1.25	17 15.6	+ 1.83	20.5
17	15 03.0	15 08.0	55 08.0	1.45	55 26.5	1.63	17 59.7	1.86	21.5
18	15 13.7	15 19.9	55 47.2	1.81	56 10.0	1.98	18 45.1	1.93	22.5
19	15 26.6	15 33.7	56 34.7	+ 2.13	57 00.9	+ 2.23	19 32.5	+ 2.03	23.5
20	15 41.2	15 48.9	57 28.4	2.32	57 56.6	2.36	20 22.8	2.17	24.5
21	15 56.7	16 04.3	58 25.1	2.36	58 53.3	2.30	21 16.7	2.32	25.5
22	16 11.7	16 18.7	59 20.4	+ 2.20	59 46.0	+ 2.03	22 14.2	+ 2.46	26.5
23	16 25.1	16 30.6	60 09.3	1.81	60 29.5	1.54	23 14.7	2.56	27.5
24	16 35.1	16 38.6	60 46.3	1.22	60 58.8	0.86	0		28.5
25	16 40.8	16 41.7	61 06.9	+ 0.48	61 10.3	+ 0.08	0 16.9	+ 2.59	0.2
26	16 41.3	16 39.7	61 08.9	- 0.30	61 03.0	- 0.68	1 18.8	2.54	1.2
27	16 36.9	16 33.0	60 52.7	1.02	60 38.5	1.32	2 18.8	2.44	2.2
28	16 28.2	16 22.7	60 20.9	- 1.58	60 00.6	- 1.78	3 15.9	+ 2.31	3.2
29	16 16.6	16 10.0	59 38.1	1.93	59 14.1	2.03	4 09.9	2.19	4.2
30	16 03.2	15 56.4	58 49.3	2.09	58 24.0	2.10	5 01.3	2.10	5.2
31	15 49.5	15 42.8	57 58.8	- 2.08	57 34.2	- 2.02	5 50.8	+ 2.04	6.2

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
MONDAY 1.					WEDNESDAY 3.				
	h m s	s	° ' "	"		h m s	s	° ' "	"
0	9 47 53.39	+ 2.2943	N. 9 14 57.3	- 9.827	0	11 33 54.39	+ 2.1398	N. 0 51 17.6	- 10.751
1	9 50 10.92	2.2901	9 05 06.3	9.873	1	11 36 02.71	2.1377	0 40 32.7	10.745
2	9 52 28.20	2.2860	8 55 12.6	9.917	2	11 38 10.91	2.1357	0 29 48.2	10.738
3	9 54 45.24	2.2819	8 45 16.3	9.960	3	11 40 18.99	2.1337	0 19 04.1	10.731
4	9 57 02.03	2.2778	8 35 17.4	10.002	4	11 42 26.95	2.1318	N. 0 08 20.5	10.723
5	9 59 18.58	2.2738	8 25 16.1	10.042	5	11 44 34.80	2.1298	S. 0 02 22.6	10.713
6	10 01 34.89	2.2698	8 15 12.4	10.082	6	11 46 42.53	2.1279	0 13 05.1	10.703
7	10 03 50.96	2.2659	8 05 06.3	10.120	7	11 48 50.15	2.1261	0 23 47.0	10.693
8	10 06 06.80	2.2620	7 54 58.0	10.157	8	11 50 57.66	2.1243	0 34 28.2	10.681
9	10 08 22.40	2.2580	7 44 47.5	10.193	9	11 53 05.07	2.1227	0 45 08.7	10.668
10	10 10 37.76	2.2542	7 34 34.9	10.227	10	11 55 12.38	2.1210	0 55 48.4	10.655
11	10 12 52.90	2.2504	7 24 20.3	10.260	11	11 57 19.59	2.1193	1 06 27.3	10.640
12	10 15 07.81	2.2466	7 14 03.7	10.293	12	11 59 26.70	2.1178	1 17 05.2	10.624
13	10 17 22.49	2.2428	7 03 45.2	10.324	13	12 01 33.72	2.1163	1 27 42.2	10.608
14	10 19 36.95	2.2392	6 53 24.8	10.354	14	12 03 40.65	2.1148	1 38 18.2	10.591
15	10 21 51.19	2.2355	6 43 02.7	10.383	15	12 05 47.49	2.1133	1 48 53.1	10.573
16	10 24 05.21	2.2319	6 32 38.8	10.412	16	12 07 54.25	2.1119	1 59 27.0	10.555
17	10 26 19.02	2.2283	6 22 13.3	10.438	17	12 10 00.92	2.1105	2 09 59.7	10.535
18	10 28 32.61	2.2248	6 11 46.2	10.464	18	12 12 07.51	2.1093	2 20 31.2	10.515
19	10 30 45.99	2.2213	6 01 17.6	10.488	19	12 14 14.03	2.1080	2 31 01.5	10.494
20	10 32 59.17	2.2179	5 50 47.6	10.512	20	12 16 20.47	2.1068	2 41 30.5	10.472
21	10 35 12.14	2.2144	5 40 16.2	10.534	21	12 18 26.85	2.1057	2 51 58.1	10.448
22	10 37 24.90	2.2110	5 29 43.5	10.555	22	12 20 33.15	2.1045	3 02 24.3	10.425
23	10 39 37.46	+ 2.2077	N. 5 19 09.6	- 10.575	23	12 22 39.39	+ 2.1033	S. 3 12 49.1	- 10.401
TUESDAY 2.					THURSDAY 4.				
	h m s	s	° ' "	"		h m s	s	° ' "	"
0	10 41 49.82	+ 2.2044	N. 5 08 34.5	- 10.594	0	12 24 45.55	+ 2.1023	S. 3 23 12.4	- 10.375
1	10 44 01.99	2.2012	4 57 58.3	10.613	1	12 26 51.66	2.1013	3 33 34.1	10.349
2	10 46 13.97	2.1980	4 47 21.0	10.630	2	12 28 57.71	2.1004	3 43 54.3	10.323
3	10 48 25.75	2.1948	4 36 42.7	10.646	3	12 31 03.71	2.0995	3 54 12.8	10.295
4	10 50 37.35	2.1918	4 26 03.5	10.661	4	12 33 09.65	2.0986	4 04 29.7	10.267
5	10 52 48.77	2.1888	4 15 23.4	10.675	5	12 35 15.54	2.0978	4 14 44.8	10.238
6	10 55 00.00	2.1858	4 04 42.5	10.688	6	12 37 21.39	2.0971	4 24 58.2	10.208
7	10 57 11.06	2.1828	3 54 00.9	10.699	7	12 39 27.19	2.0963	4 35 09.8	10.178
8	10 59 21.94	2.1799	3 43 18.6	10.710	8	12 41 32.94	2.0955	4 45 19.5	10.145
9	11 01 32.65	2.1771	3 32 35.7	10.719	9	12 43 38.65	2.0948	4 55 27.2	10.113
10	11 03 43.19	2.1743	3 21 52.3	10.728	10	12 45 44.32	2.0943	5 05 33.0	10.080
11	11 05 53.56	2.1714	3 11 08.3	10.737	11	12 47 49.96	2.0937	5 15 36.8	10.047
12	11 08 03.76	2.1687	3 00 23.8	10.744	12	12 49 55.56	2.0931	5 25 38.6	10.013
13	11 10 13.80	2.1660	2 49 39.0	10.749	13	12 52 01.13	2.0926	5 35 38.3	9.977
14	11 12 23.68	2.1634	2 38 53.9	10.754	14	12 54 06.67	2.0922	5 45 35.8	9.941
15	11 14 33.41	2.1608	2 28 08.5	10.758	15	12 56 12.19	2.0918	5 55 31.2	9.904
16	11 16 42.98	2.1583	2 17 22.9	10.762	16	12 58 17.68	2.0913	6 05 24.3	9.867
17	11 18 52.40	2.1558	2 06 37.1	10.763	17	13 00 23.15	2.0909	6 15 15.2	9.828
18	11 21 01.68	2.1534	1 55 51.3	10.764	18	13 02 28.59	2.0906	6 25 03.7	9.789
19	11 23 10.81	2.1510	1 45 05.4	10.764	19	13 04 34.02	2.0903	6 34 49.9	9.750
20	11 25 19.80	2.1487	1 34 19.6	10.763	20	13 06 39.43	2.0901	6 44 33.7	9.710
21	11 27 28.65	2.1463	1 23 33.8	10.762	21	13 08 44.83	2.0898	6 54 15.1	9.668
22	11 29 37.36	2.1441	1 12 48.2	10.758	22	13 10 50.21	2.0896	7 03 53.9	9.627
23	11 31 45.94	2.1419	1 02 02.8	10.755	23	13 12 55.58	2.0895	7 13 30.3	9.585
24	11 33 54.39	+ 2.1398	N. 0 51 17.6	- 10.751	24	13 15 00.95	+ 2.0894	S. 7 23 04.1	- 9.542

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
FRIDAY 5.					SUNDAY 7.				
0	13 15 00.95	+ 2.0894	S. 7 23 04.1	- 9.542	0	14 55 38.24	+ 2.1098	S. 13 58 54.2	- 6.722
1	13 17 06.31	2.0893	7 32 35.3	9.498	1	14 57 44.85	2.1103	14 05 35.3	6.649
2	13 19 11.66	2.0892	7 42 03.8	9.453	2	14 59 51.50	2.1112	14 12 12.1	6.577
3	13 21 17.01	2.0892	7 51 29.6	9.408	3	15 01 58.19	2.1118	14 18 44.5	6.503
4	13 23 22.36	2.0892	8 00 52.7	9.362	4	15 04 04.92	2.1126	14 25 12.4	6.428
5	13 25 27.71	2.0892	8 10 13.0	9.315	5	15 06 11.70	2.1133	14 31 35.9	6.354
6	13 27 33.06	2.0893	8 19 30.5	9.268	6	15 08 18.52	2.1140	14 37 54.9	6.280
7	13 29 38.42	2.0893	8 28 45.1	9.219	7	15 10 25.38	2.1147	14 44 09.5	6.205
8	13 31 43.78	2.0894	8 37 56.8	9.171	8	15 12 32.28	2.1153	14 50 19.5	6.128
9	13 33 49.15	2.0896	8 47 05.6	9.123	9	15 14 39.22	2.1160	14 56 24.9	6.053
10	13 35 54.53	2.0898	8 56 11.4	9.073	10	15 16 46.20	2.1167	15 02 25.8	5.976
11	13 37 59.92	2.0900	9 05 14.2	9.021	11	15 18 53.22	2.1173	15 08 22.0	5.898
12	13 40 05.33	2.0903	9 14 13.9	8.969	12	15 21 00.28	2.1180	15 14 13.6	5.822
13	13 42 10.75	2.0904	9 23 10.5	8.918	13	15 23 07.38	2.1187	15 20 00.6	5.743
14	13 44 16.18	2.0907	9 32 04.0	8.865	14	15 25 14.52	2.1193	15 25 42.8	5.665
15	13 46 21.63	2.0910	9 40 54.3	8.812	15	15 27 21.70	2.1200	15 31 20.4	5.587
16	13 48 27.10	2.0913	9 49 41.4	8.758	16	15 29 28.92	2.1207	15 36 53.2	5.508
17	13 50 32.59	2.0917	9 58 25.2	8.703	17	15 31 36.18	2.1213	15 42 21.3	5.428
18	13 52 38.10	2.0920	10 07 05.8	8.648	18	15 33 43.47	2.1218	15 47 44.6	5.348
19	13 54 43.63	2.0924	10 15 43.0	8.593	19	15 35 50.80	2.1224	15 53 03.0	5.268
20	13 56 49.19	2.0928	10 24 16.9	8.537	20	15 37 58.16	2.1230	15 58 16.7	5.188
21	13 58 54.77	2.0933	10 32 47.4	8.479	21	15 40 05.56	2.1236	16 03 25.5	5.107
22	14 01 00.38	2.0938	10 41 14.4	8.421	22	15 42 12.99	2.1242	16 08 29.5	5.026
23	14 03 06.02	+ 2.0942	S. 10 49 37.9	- 8.363	23	15 44 20.46	+ 2.1247	S. 16 13 28.6	- 4.943
SATURDAY 6.					MONDAY 8.				
0	14 05 11.68	+ 2.0946	S. 10 57 57.9	- 8.304	0	15 46 27.95	+ 2.1252	S. 16 18 22.7	- 4.862
1	14 07 17.37	2.0951	11 06 14.4	8.245	1	15 48 35.48	2.1257	16 23 12.0	4.780
2	14 09 23.09	2.0957	11 14 27.3	8.185	2	15 50 43.03	2.1262	16 27 56.3	4.697
3	14 11 28.85	2.0963	11 22 36.6	8.124	3	15 52 50.62	2.1267	16 32 35.6	4.614
4	14 13 34.64	2.0968	11 30 42.2	8.063	4	15 54 58.23	2.1271	16 37 10.0	4.531
5	14 15 40.46	2.0973	11 38 44.1	8.001	5	15 57 05.87	2.1276	16 41 39.3	4.447
6	14 17 46.31	2.0978	11 46 42.3	7.938	6	15 59 13.54	2.1280	16 46 03.6	4.363
7	14 19 52.20	2.0985	11 54 36.7	7.876	7	16 01 21.23	2.1283	16 50 22.9	4.279
8	14 21 58.13	2.0991	12 02 27.4	7.813	8	16 03 28.94	2.1288	16 54 37.1	4.195
9	14 24 04.09	2.0997	12 10 14.2	7.748	9	16 05 36.68	2.1292	16 58 46.3	4.110
10	14 26 10.09	2.1003	12 17 57.1	7.683	10	16 07 44.44	2.1295	17 02 50.3	4.025
11	14 28 16.13	2.1009	12 25 36.1	7.618	11	16 09 52.22	2.1298	17 06 49.3	3.940
12	14 30 22.20	2.1015	12 33 11.2	7.553	12	16 12 00.02	2.1302	17 10 43.1	3.854
13	14 32 28.31	2.1023	12 40 42.4	7.486	13	16 14 07.84	2.1304	17 14 31.8	3.769
14	14 34 34.47	2.1029	12 48 09.5	7.418	14	16 16 15.67	2.1307	17 18 15.4	3.683
15	14 36 40.66	2.1036	12 55 32.6	7.352	15	16 18 23.52	2.1309	17 21 53.8	3.598
16	14 38 46.90	2.1042	13 02 51.7	7.283	16	16 20 31.38	2.1311	17 25 27.1	3.511
17	14 40 53.17	2.1048	13 10 06.6	7.214	17	16 22 39.25	2.1313	17 28 55.1	3.424
18	14 42 59.48	2.1056	13 17 17.4	7.146	18	16 24 47.14	2.1315	17 32 18.0	3.338
19	14 45 05.84	2.1063	13 24 24.1	7.077	19	16 26 55.03	2.1316	17 35 35.6	3.250
20	14 47 12.24	2.1070	13 31 26.6	7.007	20	16 29 02.93	2.1317	17 38 48.0	3.163
21	14 49 18.68	2.1077	13 38 24.9	6.936	21	16 31 10.84	2.1318	17 41 55.2	3.077
22	14 51 25.16	2.1083	13 45 18.9	6.865	22	16 33 18.75	2.1318	17 44 57.2	2.989
23	14 53 31.68	2.1090	13 52 08.7	6.794	23	16 35 26.66	2.1318	17 47 53.9	2.901
24	14 55 38.24	+ 2.1098	S. 13 58 54.2	- 6.722	24	16 37 34.57	+ 2.1319	S. 17 50 45.3	- 2.813

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
TUESDAY 9.					THURSDAY 11.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
0	16 37 34.57	+ 2.1319	S. 17 50 45.3	- 2.813	0	18 19 23.07	+ 2.0990	S. 18 23 43.8	+ 1.419
1	16 39 42.49	2.1319	17 53 31.5	2.725	1	18 21 28.97	2.0977	18 22 16.1	1.504
2	16 41 50.40	2.1318	17 56 12.3	2.637	2	18 23 34.79	2.0963	18 20 43.3	1.590
3	16 43 58.31	2.1318	17 58 47.9	2.548	3	18 25 40.53	2.0949	18 19 05.3	1.675
4	16 46 06.22	2.1318	18 01 18.1	2.460	4	18 27 46.18	2.0934	18 17 22.3	1.759
5	16 48 14.12	2.1316	18 03 43.1	2.372	5	18 29 51.74	2.0920	18 15 34.2	1.843
6	16 50 22.01	2.1314	18 06 02.7	2.283	6	18 31 57.22	2.0906	18 13 41.1	1.928
7	16 52 29.89	2.1313	18 08 17.1	2.195	7	18 34 02.61	2.0891	18 11 42.9	2.011
8	16 54 37.76	2.1311	18 10 26.1	2.106	8	18 36 07.91	2.0875	18 09 39.8	2.094
9	16 56 45.62	2.1308	18 12 29.8	2.017	9	18 38 13.11	2.0859	18 07 31.6	2.178
10	16 58 53.46	2.1306	18 14 28.1	1.928	10	18 40 18.22	2.0844	18 05 18.4	2.261
11	17 01 01.29	2.1303	18 16 21.2	1.840	11	18 42 23.24	2.0829	18 03 00.3	2.343
12	17 03 09.10	2.1300	18 18 08.9	1.751	12	18 44 28.17	2.0813	18 00 37.2	2.426
13	17 05 16.89	2.1297	18 19 51.3	1.662	13	18 46 33.00	2.0797	17 58 09.2	2.508
14	17 07 24.66	2.1293	18 21 28.3	1.572	14	18 48 37.73	2.0780	17 55 36.2	2.590
15	17 09 32.40	2.1288	18 22 59.9	1.483	15	18 50 42.36	2.0764	17 52 58.4	2.671
16	17 11 40.12	2.1284	18 24 26.2	1.394	16	18 52 46.90	2.0748	17 50 15.7	2.753
17	17 13 47.81	2.1279	18 25 47.2	1.305	17	18 54 51.34	2.0731	17 47 28.1	2.833
18	17 15 55.47	2.1274	18 27 02.8	1.216	18	18 56 55.67	2.0713	17 44 35.7	2.913
19	17 18 03.10	2.1268	18 28 13.1	1.128	19	18 58 59.90	2.0697	17 41 38.5	2.993
20	17 20 10.69	2.1263	18 29 18.1	1.038	20	19 01 04.03	2.0679	17 38 36.5	3.073
21	17 22 18.25	2.1258	18 30 17.7	0.949	21	19 03 08.05	2.0662	17 35 29.7	3.153
22	17 24 25.78	2.1252	18 31 12.0	0.860	22	19 05 11.97	2.0644	17 32 18.1	3.233
23	17 26 33.27	+ 2.1244	S. 18 32 00.9	- 0.771	23	19 07 15.78	+ 2.0627	S. 17 29 01.8	+ 3.311
WEDNESDAY 10.					FRIDAY 12.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
0	17 28 40.71	+ 2.1237	S. 18 32 44.5	- 0.683	0	19 09 19.49	+ 2.0609	S. 17 25 40.8	+ 3.389
1	17 30 48.12	2.1231	18 33 22.8	0.593	1	19 11 23.09	2.0591	17 22 15.1	3.468
2	17 32 55.48	2.1223	18 33 55.7	0.504	2	19 13 26.58	2.0573	17 18 44.7	3.545
3	17 35 02.80	2.1216	18 34 23.3	0.415	3	19 15 29.97	2.0555	17 15 09.7	3.623
4	17 37 10.07	2.1208	18 34 45.5	0.327	4	19 17 33.24	2.0536	17 11 30.0	3.700
5	17 39 17.30	2.1200	18 35 02.5	0.238	5	19 19 36.40	2.0518	17 07 45.7	3.776
6	17 41 24.47	2.1191	18 35 14.1	0.150	6	19 21 39.46	2.0500	17 03 56.9	3.852
7	17 43 31.59	2.1183	18 35 20.5	- 0.062	7	19 23 42.40	2.0481	17 00 03.5	3.928
8	17 45 38.66	2.1173	18 35 21.5	+ 0.027	8	19 25 45.23	2.0463	16 56 05.6	4.003
9	17 47 45.67	2.1163	18 35 17.2	0.115	9	19 27 47.95	2.0444	16 52 03.1	4.078
10	17 49 52.62	2.1153	18 35 07.7	0.203	10	19 29 50.56	2.0426	16 47 56.2	4.153
11	17 51 59.51	2.1144	18 34 52.8	0.292	11	19 31 53.06	2.0407	16 43 44.8	4.228
12	17 54 06.35	2.1134	18 34 32.7	0.379	12	19 33 55.44	2.0388	16 39 28.9	4.302
13	17 56 13.12	2.1123	18 34 07.3	0.467	13	19 35 57.71	2.0369	16 35 08.6	4.373
14	17 58 19.83	2.1113	18 33 36.7	0.553	14	19 37 59.87	2.0351	16 30 43.9	4.448
15	18 00 26.48	2.1103	18 33 00.9	0.641	15	19 40 01.92	2.0332	16 26 14.9	4.520
16	18 02 33.06	2.1091	18 32 19.8	0.728	16	19 42 03.85	2.0313	16 21 41.5	4.593
17	18 04 39.57	2.1079	18 31 33.5	0.815	17	19 44 05.67	2.0294	16 17 03.8	4.664
18	18 06 46.01	2.1067	18 30 42.0	0.903	18	19 46 07.38	2.0276	16 12 21.8	4.735
19	18 08 52.37	2.1054	18 29 45.2	0.989	19	19 48 08.98	2.0257	16 07 35.6	4.806
20	18 10 58.66	2.1043	18 28 43.3	1.075	20	19 50 10.46	2.0238	16 02 45.1	4.877
21	18 13 04.88	2.1030	18 27 36.2	1.162	21	19 52 11.83	2.0218	15 57 50.4	4.947
22	18 15 11.02	2.1018	18 26 23.9	1.248	22	19 54 13.08	2.0199	15 52 51.5	5.017
23	18 17 17.09	2.1004	18 25 06.4	1.334	23	19 56 14.22	2.0181	15 47 48.4	5.086
24	18 19 23.07	+ 2.0990	S. 18 23 43.8	+ 1.419	24	19 58 15.25	+ 2.0163	S. 15 42 41.2	+ 5.154

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
SATURDAY 13.					MONDAY 15.				
0	19 58 15.25	+ 2.0163	S. 15 42 41.2	+ 5.154	0	21 33 04.72	+ 1.9490	S. 10 24 37.8	+ 7.919
1	20 00 16.17	2.0143	15 37 49.9	5.223	1	21 35 01.21	1.9411	10 16 41.3	7.965
2	20 02 16.97	2.0124	15 32 14.5	5.291	2	21 36 57.65	1.9402	10 08 42.0	8.012
3	20 04 17.66	2.0106	15 26 55.0	5.358	3	21 38 54.03	1.9393	10 00 39.9	8.057
4	20 06 18.24	2.0087	15 21 31.5	5.425	4	21 40 50.36	1.9383	9 52 35.2	8.101
5	20 08 18.70	2.0068	15 16 04.0	5.492	5	21 42 46.63	1.9375	9 44 27.8	8.145
6	20 10 19.06	2.0051	15 10 32.5	5.558	6	21 44 42.86	1.9368	9 36 17.8	8.188
7	20 12 19.31	2.0032	15 04 57.0	5.624	7	21 46 39.04	1.9359	9 28 05.2	8.232
8	20 14 19.44	2.0013	14 59 17.6	5.689	8	21 48 35.17	1.9352	9 19 50.0	8.274
9	20 16 19.47	1.9995	14 53 34.3	5.753	9	21 50 31.26	1.9345	9 11 32.3	8.317
10	20 18 19.38	1.9977	14 47 47.2	5.818	10	21 52 27.31	1.9338	9 03 12.0	8.359
11	20 20 19.19	1.9959	14 41 56.2	5.882	11	21 54 23.32	1.9333	8 54 49.2	8.400
12	20 22 18.89	1.9941	14 36 01.4	5.945	12	21 56 19.30	1.9327	8 46 24.0	8.441
13	20 24 18.48	1.9923	14 30 02.8	6.008	13	21 58 15.24	1.9321	8 37 56.3	8.481
14	20 26 17.97	1.9906	14 24 00.4	6.071	14	22 00 11.15	1.9316	8 29 26.3	8.521
15	20 28 17.35	1.9888	14 17 54.3	6.133	15	22 02 07.03	1.9311	8 20 53.8	8.561
16	20 30 16.63	1.9871	14 11 44.4	6.195	16	22 04 02.88	1.9307	8 12 19.0	8.599
17	20 32 15.80	1.9853	14 05 30.9	6.256	17	22 05 58.71	1.9303	8 03 41.9	8.638
18	20 34 14.87	1.9837	13 59 13.7	6.317	18	22 07 54.52	1.9299	7 55 02.5	8.675
19	20 36 13.84	1.9819	13 52 52.9	6.377	19	22 09 50.30	1.9296	7 46 20.9	8.713
20	20 38 12.70	1.9802	13 46 28.5	6.436	20	22 11 46.07	1.9293	7 37 37.0	8.750
21	20 40 11.46	1.9786	13 40 00.6	6.495	21	22 13 41.82	1.9290	7 28 50.9	8.787
22	20 42 10.13	1.9770	13 33 29.1	6.554	22	22 15 37.55	1.9288	7 20 02.6	8.823
23	20 44 08.70	+ 1.9753	S. 13 26 54.1	+ 6.613	23	22 17 33.28	+ 1.9288	S. 7 11 12.2	+ 8.858
SUNDAY 14.					TUESDAY 16.				
0	20 46 07.17	+ 1.9737	S. 13 20 15.6	+ 6.671	0	22 19 29.00	+ 1.9286	S. 7 02 19.7	+ 8.893
1	20 48 05.54	1.9721	13 13 33.6	6.728	1	22 21 24.71	1.9285	6 53 25.1	8.927
2	20 50 03.82	1.9706	13 06 48.2	6.785	2	22 23 20.42	1.9285	6 44 28.5	8.961
3	20 52 02.01	1.9690	12 59 59.4	6.842	3	22 25 16.13	1.9285	6 35 29.8	8.996
4	20 54 00.10	1.9674	12 53 07.2	6.898	4	22 27 11.84	1.9286	6 26 29.1	9.028
5	20 55 58.10	1.9660	12 46 11.6	6.954	5	22 29 07.56	1.9288	6 17 26.5	9.059
6	20 57 56.02	1.9645	12 39 12.7	7.008	6	22 31 03.29	1.9288	6 08 22.0	9.092
7	20 59 53.84	1.9630	12 32 10.6	7.063	7	22 32 59.02	1.9290	5 59 15.5	9.123
8	21 01 51.58	1.9616	12 25 05.2	7.118	8	22 34 54.77	1.9293	5 50 07.2	9.154
9	21 03 49.23	1.9601	12 17 56.5	7.172	9	22 36 50.54	1.9296	5 40 57.0	9.185
10	21 05 46.79	1.9588	12 10 44.6	7.224	10	22 38 46.32	1.9298	5 31 45.0	9.215
11	21 07 44.28	1.9574	12 03 29.6	7.277	11	22 40 42.12	1.9303	5 22 31.2	9.244
12	21 09 41.68	1.9560	11 56 11.4	7.329	12	22 42 37.95	1.9307	5 13 15.7	9.273
13	21 11 39.00	1.9547	11 48 50.1	7.381	13	22 44 33.80	1.9312	5 03 58.4	9.302
14	21 13 36.24	1.9534	11 41 25.7	7.433	14	22 46 29.69	1.9317	4 54 39.5	9.329
15	21 15 33.41	1.9522	11 33 58.2	7.483	15	22 48 25.60	1.9322	4 45 18.9	9.357
16	21 17 30.50	1.9509	11 26 27.7	7.533	16	22 50 21.55	1.9328	4 35 56.7	9.383
17	21 19 27.52	1.9497	11 18 54.2	7.583	17	22 52 17.54	1.9334	4 26 32.9	9.410
18	21 21 24.46	1.9485	11 11 17.7	7.633	18	22 54 13.56	1.9341	4 17 07.5	9.436
19	21 23 21.34	1.9473	11 03 38.3	7.682	19	22 56 09.63	1.9349	4 07 40.6	9.462
20	21 25 18.14	1.9462	10 55 55.9	7.730	20	22 58 05.75	1.9358	3 58 12.1	9.487
21	21 27 14.88	1.9452	10 48 10.7	7.778	21	23 00 01.92	1.9366	3 48 42.2	9.510
22	21 29 11.56	1.9441	10 40 22.6	7.826	22	23 01 58.14	1.9375	3 39 10.9	9.533
23	21 31 08.17	1.9430	10 32 31.6	7.873	23	23 03 54.42	1.9384	3 29 38.2	9.558
24	21 33 04.72	+ 1.9420	S. 10 24 37.8	+ 7.919	24	23 05 50.75	+ 1.9394	S. 3 20 04.0	+ 9.581

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
WEDNESDAY 17.					FRIDAY 19.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
0	23 05 50.75	+ 1.9394	S. 3 20 04.0	+ 9.581	0	0 41 04.46	+ 2.0492	N. 4 34 41.0	+ 9.953
1	23 07 47.15	1.9405	3 10 28.5	9.603	1	0 43 07.52	2.0527	4 44 37.9	9.943
2	23 09 43.61	1.9415	3 00 51.7	9.624	2	0 45 10.79	2.0563	4 54 34.2	9.933
3	23 11 40.13	1.9427	2 51 13.6	9.645	3	0 47 14.28	2.0601	5 04 29.8	9.922
4	23 13 36.73	1.9439	2 41 34.3	9.665	4	0 49 18.00	2.0639	5 14 24.8	9.910
5	23 15 33.40	1.9452	2 31 53.8	9.685	5	0 51 21.95	2.0678	5 24 19.0	9.898
6	23 17 30.15	1.9465	2 22 12.1	9.704	6	0 53 26.13	2.0717	5 34 12.5	9.884
7	23 19 26.98	1.9478	2 12 29.3	9.723	7	0 55 30.55	2.0756	5 44 05.1	9.869
8	23 21 23.89	1.9492	2 02 45.3	9.742	8	0 57 35.20	2.0795	5 53 56.8	9.854
9	23 23 20.88	1.9506	1 53 00.3	9.758	9	0 59 40.09	2.0836	6 03 47.6	9.838
10	23 25 17.96	1.9521	1 43 14.3	9.776	10	1 01 45.23	2.0878	6 13 37.4	9.822
11	23 27 15.13	1.9537	1 33 27.2	9.793	11	1 03 50.62	2.0918	6 23 26.2	9.803
12	23 29 12.40	1.9553	1 23 39.2	9.808	12	1 05 56.25	2.0960	6 33 13.8	9.784
13	23 31 09.76	1.9569	1 13 50.3	9.823	13	1 08 02.14	2.1003	6 43 00.3	9.765
14	23 33 07.23	1.9587	1 04 00.4	9.838	14	1 10 08.29	2.1046	6 52 45.6	9.745
15	23 35 04.80	1.9604	0 54 09.7	9.853	15	1 12 14.69	2.1089	7 02 29.7	9.723
16	23 37 02.48	1.9623	0 44 18.1	9.867	16	1 14 21.36	2.1133	7 12 12.4	9.701
17	23 39 00.27	1.9642	0 34 25.7	9.879	17	1 16 28.29	2.1178	7 21 53.8	9.678
18	23 40 58.18	1.9661	0 24 32.6	9.891	18	1 18 35.49	2.1223	7 31 33.7	9.653
19	23 42 56.20	1.9680	0 14 38.8	9.903	19	1 20 42.96	2.1268	7 41 12.1	9.628
20	23 44 54.34	1.9701	S. 0 04 44.2	9.915	20	1 22 50.71	2.1314	7 50 49.0	9.602
21	23 46 52.61	1.9722	N. 0 05 11.0	9.925	21	1 24 58.73	2.1360	8 00 24.3	9.574
22	23 48 51.00	1.9743	0 15 06.8	9.934	22	1 27 07.03	2.1407	8 09 57.9	9.546
23	23 50 49.52	+ 1.9765	N. 0 25 03.1	+ 9.943	23	1 29 15.61	+ 2.1454	N. 8 19 29.8	+ 9.518
THURSDAY 18.					SATURDAY 20.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
0	23 52 48.18	+ 1.9788	N. 0 35 00.0	+ 9.952	0	1 31 24.48	+ 2.1503	N. 8 29 00.0	+ 9.488
1	23 54 46.97	1.9810	0 44 57.4	9.960	1	1 33 33.64	2.1550	8 38 28.3	9.456
2	23 56 45.90	1.9834	0 54 55.2	9.968	2	1 35 43.08	2.1598	8 47 54.7	9.424
3	23 58 44.98	1.9858	1 04 53.5	9.974	3	1 37 52.82	2.1648	8 57 19.2	9.392
4	0 00 44.20	1.9883	1 14 52.1	9.980	4	1 40 02.86	2.1698	9 06 41.7	9.358
5	0 02 43.57	1.9908	1 24 51.1	9.986	5	1 42 13.19	2.1747	9 16 02.1	9.322
6	0 04 43.10	1.9934	1 34 50.4	9.991	6	1 44 23.82	2.1798	9 25 20.3	9.285
7	0 06 42.78	1.9960	1 44 50.0	9.995	7	1 46 34.76	2.1849	9 34 36.3	9.248
8	0 08 42.62	1.9987	1 54 49.8	9.998	8	1 48 46.01	2.1900	9 43 50.1	9.210
9	0 10 42.62	2.0014	2 04 49.7	10.000	9	1 50 57.56	2.1951	9 53 01.5	9.170
10	0 12 42.79	2.0043	2 14 49.8	10.002	10	1 53 09.42	2.2003	10 02 10.5	9.130
11	0 14 43.13	2.0071	2 24 50.0	10.003	11	1 55 21.59	2.2054	10 11 17.1	9.088
12	0 16 43.64	2.0100	2 34 50.2	10.003	12	1 57 34.07	2.2107	10 20 21.1	9.045
13	0 18 44.33	2.0130	2 44 50.4	10.003	13	1 59 46.88	2.2161	10 29 22.5	9.002
14	0 20 45.20	2.0160	2 54 50.6	10.003	14	2 02 00.00	2.2213	10 38 21.3	8.957
15	0 22 46.25	2.0191	3 04 50.8	10.002	15	2 04 13.44	2.2267	10 47 17.3	8.910
16	0 24 47.49	2.0222	3 14 50.8	9.998	16	2 06 27.21	2.2322	10 56 10.5	8.863
17	0 26 48.91	2.0253	3 24 50.6	9.995	17	2 08 41.30	2.2376	11 05 00.9	8.815
18	0 28 50.53	2.0286	3 34 50.2	9.992	18	2 10 55.72	2.2431	11 13 48.3	8.765
19	0 30 52.34	2.0318	3 44 49.6	9.988	19	2 13 10.47	2.2486	11 22 32.7	8.714
20	0 32 54.35	2.0352	3 54 48.7	9.982	20	2 15 25.55	2.2541	11 31 14.0	8.663
21	0 34 56.57	2.0387	4 04 47.4	9.975	21	2 17 40.96	2.2596	11 39 52.2	8.610
22	0 36 58.99	2.0421	4 14 45.7	9.968	22	2 19 56.70	2.2652	11 48 27.2	8.556
23	0 39 01.62	2.0456	4 24 43.6	9.961	23	2 22 12.78	2.2708	11 56 58.9	8.500
24	0 41 04.46	+ 2.0492	N. 4 34 41.0	+ 9.953	24	2 24 29.20	+ 2.2765	N. 12 05 27.2	+ 8.443

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
SUNDAY 21.					TUESDAY 23.				
0	2 24 29.20	+ 2.2765	N. 12 05 27.2	+ 8.443	0	4 20 17.75	+ 2.5415	N. 17 22 01.9	+ 4.273
1	2 26 45.96	2.2821	12 13 52.1	8.386	1	4 22 50.38	2.5462	17 26 14.8	4.158
2	2 29 03.05	2.2878	12 22 13.5	8.327	2	4 25 23.29	2.5508	17 30 20.8	4.041
3	2 31 20.49	2.2935	12 30 31.3	8.266	3	4 27 56.47	2.5552	17 34 19.7	3.923
4	2 33 38.27	2.2992	12 38 45.4	8.204	4	4 30 29.91	2.5596	17 38 11.5	3.803
5	2 35 56.39	2.3048	12 46 55.8	8.143	5	4 33 03.62	2.5640	17 41 56.1	3.683
6	2 38 14.85	2.3106	12 55 02.5	8.079	6	4 35 37.59	2.5682	17 45 33.5	3.563
7	2 40 33.66	2.3163	13 03 05.3	8.013	7	4 38 11.81	2.5723	17 49 03.6	3.440
8	2 42 52.81	2.3221	13 11 04.1	7.947	8	4 40 46.27	2.5764	17 52 26.3	3.318
9	2 45 12.31	2.3278	13 18 58.9	7.879	9	4 43 20.98	2.5805	17 55 41.7	3.194
10	2 47 32.15	2.3336	13 26 49.6	7.810	10	4 45 55.93	2.5844	17 58 49.6	3.069
11	2 49 52.34	2.3394	13 34 36.1	7.740	11	4 48 31.11	2.5883	18 01 50.0	2.943
12	2 52 12.88	2.3452	13 42 18.4	7.669	12	4 51 06.52	2.5920	18 04 42.7	2.816
13	2 54 33.77	2.3510	13 49 56.4	7.597	13	4 53 42.15	2.5957	18 07 27.9	2.689
14	2 56 55.00	2.3568	13 57 30.0	7.523	14	4 56 18.00	2.5993	18 10 05.4	2.562
15	2 59 16.58	2.3626	14 04 59.1	7.448	15	4 58 54.06	2.6027	18 12 35.3	2.433
16	3 01 38.51	2.3684	14 12 23.7	7.372	16	5 01 30.32	2.6060	18 14 57.4	2.303
17	3 04 00.79	2.3742	14 19 43.7	7.293	17	5 04 06.78	2.6093	18 17 11.7	2.173
18	3 06 23.41	2.3799	14 26 58.9	7.214	18	5 06 43.43	2.6124	18 19 18.1	2.042
19	3 08 46.38	2.3858	14 34 09.4	7.135	19	5 09 20.27	2.6155	18 21 16.7	1.911
20	3 11 09.70	2.3916	14 41 15.1	7.053	20	5 11 57.29	2.6184	18 23 07.4	1.778
21	3 13 33.37	2.3973	14 48 15.8	6.970	21	5 14 34.48	2.6212	18 24 50.1	1.646
22	3 15 57.38	2.4030	14 55 11.5	6.887	22	5 17 11.84	2.6240	18 26 24.9	1.513
23	3 18 21.73	+ 2.4088	N. 15 02 02.2	+ 6.802	23	5 19 49.36	+ 2.6267	N. 18 27 51.6	+ 1.378
MONDAY 22.					WEDNESDAY 24.				
0	3 20 46.43	+ 2.4145	N. 15 08 47.7	+ 6.715	0	5 22 27.04	+ 2.6293	N. 18 29 10.3	+ 1.244
1	3 23 11.47	2.4202	15 15 28.0	6.627	1	5 25 04.87	2.6316	18 30 20.9	1.109
2	3 25 36.85	2.4259	15 22 03.0	6.538	2	5 27 42.83	2.6338	18 31 23.4	0.973
3	3 28 02.58	2.4316	15 28 32.6	6.448	3	5 30 20.93	2.6361	18 32 17.7	0.837
4	3 30 28.64	2.4372	15 34 56.8	6.357	4	5 32 59.16	2.6382	18 33 03.8	0.701
5	3 32 55.04	2.4428	15 41 15.4	6.263	5	5 35 37.51	2.6401	18 33 41.8	0.564
6	3 35 21.77	2.4483	15 47 28.4	6.169	6	5 38 15.97	2.6419	18 34 11.5	0.427
7	3 37 48.84	2.4539	15 53 35.7	6.074	7	5 40 54.54	2.6437	18 34 33.0	0.290
8	3 40 16.24	2.4594	15 59 37.3	5.978	8	5 43 33.21	2.6453	18 34 46.3	0.153
9	3 42 43.97	2.4648	16 05 33.1	5.881	9	5 46 11.97	2.6468	18 34 51.3	+ 0.014
10	3 45 12.02	2.4703	16 11 23.0	5.782	10	5 48 50.82	2.6481	18 34 48.0	- 0.124
11	3 47 40.41	2.4758	16 17 06.9	5.682	11	5 51 29.74	2.6493	18 34 36.4	0.263
12	3 50 09.11	2.4811	16 22 44.8	5.581	12	5 54 08.74	2.6505	18 34 16.5	0.401
13	3 52 38.14	2.4865	16 28 16.6	5.478	13	5 56 47.80	2.6515	18 33 48.3	0.539
14	3 55 07.49	2.4917	16 33 42.1	5.374	14	5 59 26.92	2.6523	18 33 11.8	0.678
15	3 57 37.15	2.4969	16 39 01.4	5.269	15	6 02 06.08	2.6531	18 32 26.9	0.818
16	4 00 07.12	2.5021	16 44 14.4	5.163	16	6 04 45.29	2.6538	18 31 33.7	0.956
17	4 02 37.40	2.5073	16 49 20.9	5.055	17	6 07 24.53	2.6543	18 30 32.2	1.094
18	4 05 07.99	2.5123	16 54 21.0	4.947	18	6 10 03.80	2.6547	18 29 22.4	1.233
19	4 07 38.88	2.5173	16 59 14.6	4.838	19	6 12 43.09	2.6549	18 28 04.2	1.373
20	4 10 10.07	2.5223	17 04 01.5	4.727	20	6 15 22.39	2.6551	18 26 37.7	1.511
21	4 12 41.56	2.5272	17 08 41.8	4.615	21	6 18 01.70	2.6552	18 25 02.9	1.649
22	4 15 13.34	2.5320	17 13 15.3	4.502	22	6 20 41.01	2.6551	18 23 19.8	1.788
23	4 17 45.40	2.5368	17 17 42.0	4.388	23	6 23 20.31	2.6549	18 21 28.4	1.926
24	4 20 17.75	+ 2.5415	N. 17 22 01.9	+ 4.273	24	6 25 59.60	+ 2.6546	N. 18 19 28.7	- 2.063

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
THURSDAY 25.					SATURDAY 27.				
0	h m s	s	N. 18 19 28.7	"	0	h m s	s	N. 14 13 16.1	"
1	6 25 59.60	+ 2.6546	18 19 28.7	- 2.063	1	8 31 01.44	+ 2.5218	14 13 16.1	- 7.837
2	6 28 38.86	2.6541	18 17 20.8	2.201	2	8 33 32.61	2.5173	14 05 23.1	7.930
3	6 31 18.09	2.6535	18 15 04.6	2.338	3	8 36 03.51	2.5128	13 57 24.5	8.022
4	6 33 57.28	2.6528	18 12 40.2	2.475	4	8 38 34.14	2.5082	13 49 20.5	8.112
5	6 36 36.43	2.6521	18 10 07.6	2.612	5	8 41 04.49	2.5035	13 41 11.1	8.201
6	6 39 15.53	2.6512	18 07 26.8	2.748	6	8 43 34.56	2.4989	13 32 56.4	8.289
7	6 41 54.57	2.6501	18 04 37.8	2.884	7	8 46 04.36	2.4943	13 24 36.4	8.376
8	6 44 33.54	2.6489	18 01 40.7	3.019	8	8 48 33.87	2.4895	13 16 11.3	8.460
9	6 47 12.44	2.6477	17 58 35.5	3.154	9	8 51 03.10	2.4848	13 07 41.2	8.543
10	6 49 51.27	2.6464	17 55 22.2	3.288	10	8 53 32.05	2.4802	12 59 06.1	8.625
11	6 52 30.01	2.6449	17 52 00.9	3.422	11	8 56 00.72	2.4754	12 50 26.2	8.706
12	6 55 08.66	2.6433	17 48 31.6	3.555	12	8 58 29.10	2.4706	12 41 41.4	8.786
13	6 57 47.21	2.6417	17 44 54.3	3.688	13	9 00 57.19	2.4658	12 32 51.9	8.863
14	7 00 25.66	2.6398	17 41 09.1	3.819	14	9 03 25.00	2.4611	12 23 57.8	8.939
15	7 03 03.99	2.6378	17 37 16.0	3.951	15	9 05 52.52	2.4563	12 14 59.2	9.013
16	7 05 42.20	2.6358	17 33 15.0	4.082	16	9 08 19.75	2.4514	12 05 56.2	9.087
17	7 08 20.29	2.6337	17 29 06.2	4.212	17	9 10 46.69	2.4466	11 56 48.8	9.159
18	7 10 58.25	2.6315	17 24 49.6	4.341	18	9 13 13.34	2.4418	11 47 37.1	9.230
19	7 13 36.07	2.6292	17 20 25.3	4.468	19	9 15 39.70	2.4369	11 38 21.2	9.299
20	7 16 13.75	2.6268	17 15 53.4	4.596	20	9 18 05.77	2.4321	11 29 01.2	9.367
21	7 18 51.29	2.6243	17 11 13.8	4.723	21	9 20 31.55	2.4272	11 19 37.2	9.433
22	7 21 28.67	2.6217	17 06 26.6	4.849	22	9 22 57.03	2.4223	11 10 09.3	9.497
23	7 24 05.89	2.6189	17 01 31.9	4.973	23	9 25 22.23	2.4176	11 00 37.6	9.560
24	7 26 42.94	+ 2.6161	N. 16 56 29.8	- 5.097	24	9 27 47.14	+ 2.4127	N. 10 51 02.1	- 9.623
FRIDAY 26.					SUNDAY 28.				
0	h m s	s	N. 16 51 20.3	"	0	h m s	s	N. 10 41 22.9	"
1	7 29 19.82	+ 2.6132	16 51 20.3	- 5.220	1	9 30 11.75	+ 2.4078	10 41 22.9	- 9.683
2	7 31 56.52	2.6102	16 46 03.4	5.343	2	9 32 36.07	2.4030	10 31 40.1	9.742
3	7 34 33.04	2.6072	16 40 39.2	5.463	3	9 35 00.11	2.3983	10 21 53.9	9.799
4	7 37 09.38	2.6040	16 35 07.8	5.583	4	9 37 23.86	2.3934	10 12 04.2	9.856
5	7 39 45.52	2.6008	16 29 29.2	5.703	5	9 39 47.32	2.3886	10 02 11.2	9.910
6	7 42 21.47	2.5976	16 23 43.5	5.821	6	9 42 10.49	2.3838	9 52 15.0	9.963
7	7 44 57.22	2.5941	16 17 50.7	5.938	7	9 44 33.38	2.3791	9 42 15.6	10.016
8	7 47 32.76	2.5906	16 11 51.0	6.053	8	9 46 55.98	2.3743	9 32 13.1	10.067
9	7 50 08.09	2.5870	16 05 44.4	6.168	9	9 49 18.29	2.3695	9 22 07.6	10.116
10	7 52 43.20	2.5833	15 59 30.9	6.282	10	9 51 40.32	2.3648	9 11 59.2	10.163
11	7 55 18.09	2.5797	15 53 10.6	6.394	11	9 54 02.07	2.3602	9 01 48.0	10.209
12	7 57 52.76	2.5759	15 46 43.6	6.506	12	9 56 23.54	2.3555	8 51 34.1	10.253
13	8 00 27.20	2.5721	15 40 09.9	6.616	13	9 58 44.73	2.3508	8 41 17.6	10.297
14	8 03 01.41	2.5682	15 33 29.7	6.723	14	10 01 05.64	2.3462	8 30 58.5	10.339
15	8 05 35.38	2.5642	15 26 43.1	6.831	15	10 03 26.27	2.3416	8 20 36.9	10.380
16	8 08 09.12	2.5603	15 19 50.0	6.938	16	10 05 46.63	2.3370	8 10 12.9	10.420
17	8 10 42.62	2.5562	15 12 50.6	7.043	17	10 08 06.71	2.3324	7 59 46.5	10.458
18	8 13 15.86	2.5520	15 05 44.9	7.147	18	10 10 26.52	2.3279	7 49 17.9	10.495
19	8 15 48.86	2.5479	14 58 33.0	7.249	19	10 12 46.06	2.3234	7 38 47.1	10.530
20	8 18 21.61	2.5437	14 51 15.0	7.350	20	10 15 05.33	2.3189	7 28 14.3	10.563
21	8 20 54.10	2.5393	14 43 51.0	7.450	21	10 17 24.33	2.3145	7 17 39.5	10.597
22	8 23 26.33	2.5350	14 36 21.0	7.549	22	10 19 43.07	2.3102	7 07 02.7	10.628
23	8 25 58.30	2.5306	14 28 45.1	7.646	23	10 22 01.55	2.3058	6 56 24.1	10.658
24	8 28 30.00	2.5262	14 21 03.5	7.742	24	10 24 19.76	2.3014	6 45 43.7	10.687
25	8 31 01.44	+ 2.5218	N. 14 13 16.1	- 7.837	25	10 26 37.72	+ 2.2972	N. 6 35 01.6	- 10.714

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.	Noon.	P. L. of Diff.	IIIh	P. L. of Diff.	VIh	P. L. of Diff.	IXh	P. L. of Diff.
		° ' "		° ' "		° ' "		° ' "	
1	SUN W.	76 15 11	2620	77 53 39	2632	79 31 50	2645	81 09 44	2657
	Pollux W.	35 40 23	2572	37 19 57	2564	38 59 42	2558	40 39 35	2553
	VENUS W.	35 02 36	2772	36 37 40	2779	38 12 36	2784	39 47 25	2791
	MARS E.	34 39 34	2384	32 55 37	2397	31 11 59	2410	29 28 39	2424
	Spica E.	56 24 41	2310	54 38 56	2322	52 53 28	2333	51 08 17	2346
	Antares E.	102 00 38	2354	100 15 57	2365	98 31 32	2377	96 47 24	2389
2	SUN W.	89 14 58	2722	90 51 09	2735	92 27 02	2747	94 02 39	2761
	Pollux W.	48 59 41	2558	50 39 34	2561	52 19 22	2566	53 59 03	2572
	VENUS W.	47 39 02	2833	49 12 47	2844	50 46 18	2852	52 19 38	2863
	Spica E.	42 26 54	2409	40 43 32	2422	39 00 29	2434	37 17 43	2448
	Antares E.	88 10 54	2448	86 28 27	2460	84 46 17	2472	83 04 24	2485
3	SUN W.	101 56 27	2825	103 30 22	2838	105 04 01	2850	106 37 24	2863
	Pollux W.	62 15 16	2609	63 53 59	2617	65 32 31	2625	67 10 52	2634
	VENUS W.	60 02 50	2918	61 34 46	2929	63 06 28	2940	64 37 56	2950
	Regulus W.	25 17 06	2551	26 57 09	2556	28 37 04	2563	30 16 50	2569
	Spica E.	28 48 36	2515	27 07 44	2530	25 27 13	2515	23 47 02	2560
	Antares E.	74 39 22	2547	72 59 14	2559	71 19 23	2572	69 39 49	2585
	α Aquilæ E.	122 28 15	3075	120 59 35	3068	119 30 46	3060	118 01 48	3056
4	SUN W.	114 20 16	2925	115 52 03	2937	117 23 35	2949	118 54 52	2962
	Pollux W.	75 19 32	2681	76 56 38	2689	78 33 32	2699	80 10 13	2709
	VENUS W.	72 11 46	3008	73 41 49	3018	75 11 40	3029	76 41 17	3039
	Regulus W.	38 33 06	2611	40 11 46	2620	41 50 14	2629	43 28 30	2638
	Antares E.	61 26 23	2649	59 48 34	2662	58 11 03	2675	56 33 50	2689
	α Aquilæ E.	110 35 53	3048	109 06 40	3049	107 37 28	3052	106 08 19	3055
	SATURN E.	122 06 29	2599	120 27 33	2609	118 48 50	2618	117 10 20	2629
5	Pollux W.	88 10 24	2757	89 45 48	2768	91 20 58	2777	92 55 56	2788
	VENUS W.	84 06 02	3093	85 34 20	3105	87 02 24	3114	88 30 17	3124
	Regulus W.	51 36 44	2684	53 13 45	2693	54 50 34	2702	56 27 11	2711
	MARS W.	18 36 54	2777	20 11 52	2786	21 46 38	2795	23 21 13	2803
	Antares E.	48 32 16	2758	46 56 53	2773	45 21 50	2788	43 47 07	2805
	α Aquilæ E.	98 43 53	3082	97 15 21	3088	95 46 57	3096	94 18 42	3103
	SATURN E.	109 01 11	2677	107 24 00	2687	105 47 03	2695	104 10 17	2705
6	Pollux W.	100 47 27	2838	102 21 06	2848	103 54 32	2858	105 27 45	2869
	VENUS W.	95 46 33	3175	97 13 12	3185	98 39 39	3194	100 05 55	3204
	Regulus W.	64 27 17	2756	66 02 43	2765	67 37 57	2772	69 13 01	2782
	MARS W.	31 11 19	2848	32 44 45	2856	34 18 00	2865	35 51 04	2874
	Antares E.	35 59 01	2896	34 26 37	2919	32 54 42	2942	31 23 16	2967
	α Aquilæ E.	87 00 04	3151	85 32 56	3162	84 06 01	3172	82 39 19	3185
	SATURN E.	96 09 34	2751	94 34 02	2760	92 58 41	2768	91 23 31	2777
7	Pollux W.	113 10 29	2921	114 42 21	2932	116 13 59	2943	117 45 23	2954
	VENUS W.	107 14 21	3252	108 39 29	3262	110 04 25	3270	111 29 11	3281
	Regulus W.	77 05 32	2823	78 39 30	2831	80 13 17	2838	81 46 55	2847
	MARS W.	43 33 31	2918	45 05 27	2927	46 37 12	2935	48 08 47	2943
	Spica W.	23 33 11	2842	25 06 45	2846	26 40 13	2852	28 13 34	2858
	α Aquilæ E.	75 29 36	3252	74 04 28	3267	72 39 38	3283	71 15 07	3300
	SATURN E.	83 30 32	2819	81 56 29	2828	80 22 37	2836	78 48 56	2844

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.	P. L. of Diff.	XV ^h	P. L. of Diff.	XVIII ^h	P. L. of Diff.	XXI ^h	P. L. of Diff.
			° ' "		° ' "		° ' "		° ' "	
1	SUN	W.	82 47 21	2670	84 24 41	2683	86 01 44	2695	87 38 30	2709
	Pollux	W.	42 19 35	2551	43 59 38	2550	45 39 42	2551	47 19 44	2555
	VENUS	W.	41 22 05	2798	42 56 35	2806	44 30 55	2815	46 05 04	2823
	MARS	E.	27 45 38	2437	26 02 56	2451	24 20 34	2465	22 38 31	2480
	Spica	E.	49 23 24	2358	47 38 49	2371	45 54 33	2383	44 10 34	2396
	Antares	E.	95 03 33	2400	93 19 58	2412	91 36 40	2424	89 53 39	2435
2	SUN	W.	95 37 58	2773	97 13 01	2787	98 47 46	2799	100 22 15	2812
	Pollux	W.	55 38 37	2579	57 18 01	2585	58 57 16	2593	60 36 21	2600
	VENUS	W.	53 52 44	2874	55 25 36	2885	56 58 14	2895	58 30 39	2906
	Spica	E.	35 35 16	2460	33 53 07	2475	32 11 18	2487	30 29 47	2502
	Antares	E.	81 22 49	2497	79 41 31	2510	78 00 31	2522	76 19 48	2534
3	SUN	W.	108 10 30	2876	109 43 20	2888	111 15 54	2900	112 48 13	2912
	Pollux	W.	68 49 01	2643	70 26 57	2652	72 04 41	2661	73 42 13	2671
	VENUS	W.	66 09 11	2962	67 40 11	2974	69 10 56	2985	70 41 28	2996
	Regulus	W.	31 56 27	2577	33 35 53	2585	35 15 08	2593	36 54 13	2601
	Spica	E.	22 07 12	2577	20 27 46	2596	18 48 45	2615	17 10 10	2635
	Antares	E.	68 00 33	2597	66 21 34	2610	64 42 53	2623	63 04 29	2636
	α Aquilæ	E.	116 32 44	3052	115 03 35	3049	113 34 23	3047	112 05 08	3047
4	SUN	W.	120 25 53	2973	121 56 39	2985	123 27 11	2997	124 57 26	3007
	Pollux	W.	81 46 41	2719	83 22 56	2729	84 58 58	2738	86 34 48	2748
	VENUS	W.	78 10 41	3051	79 39 51	3062	81 08 47	3072	82 37 31	3082
	Regulus	W.	45 06 34	2647	46 44 25	2656	48 22 04	2666	49 59 30	2675
	Antares	E.	54 56 55	2701	53 20 17	2716	51 43 58	2730	50 07 58	2744
	α Aquilæ	E.	104 39 14	3060	103 10 15	3064	101 41 21	3069	100 12 33	3075
	SATURN	E.	115 32 04	2638	113 54 01	2649	112 16 12	2657	110 38 35	2667
5	Pollux	W.	94 30 40	2798	96 05 11	2808	97 39 29	2817	99 13 35	2828
	VENUS	W.	89 57 57	3134	91 25 25	3146	92 52 39	3155	94 19 42	3165
	Regulus	W.	58 03 36	2720	59 39 49	2729	61 15 50	2738	62 51 39	2747
	MARS	W.	24 55 37	2811	26 29 50	2821	28 03 51	2829	29 37 41	2838
	Antares	E.	42 12 45	2821	40 38 44	2838	39 05 06	2856	37 31 51	2876
	α Aquilæ	E.	92 50 36	3112	91 22 41	3121	89 54 57	3131	88 27 25	3140
	SATURN	E.	102 33 44	2714	100 57 23	2724	99 21 15	2732	97 45 18	2742
6	Pollux	W.	107 00 44	2879	108 33 30	2889	110 06 03	2899	111 38 23	2910
	VENUS	W.	101 31 59	3214	102 57 51	3224	104 23 32	3233	105 49 02	3242
	Regulus	W.	70 47 53	2790	72 22 34	2798	73 57 04	2807	75 31 23	2815
	MARS	W.	37 23 56	2883	38 56 37	2892	40 29 06	2901	42 01 24	2909
	Antares	E.	29 52 22	2997	28 22 05	3030	26 52 29	3065	25 23 37	3105
	α Aquilæ	E.	81 12 52	3197	79 46 39	3210	78 20 42	3224	76 55 01	3237
	SATURN	E.	89 48 33	2785	88 13 46	2795	86 39 11	2802	85 04 46	2811
7	Pollux	W.	119 16 33	2966	120 47 28	2978	122 18 08	2990	123 48 33	3002
	VENUS	W.	112 53 45	3290	114 18 08	3299	115 42 21	3307	117 06 24	3317
	Regulus	W.	83 20 22	2855	84 53 39	2863	86 26 45	2870	87 59 42	2878
	MARS	W.	49 40 11	2951	51 11 24	2960	52 42 27	2968	54 13 20	2976
	Spica	W.	29 46 47	2864	31 19 52	2869	32 52 50	2876	34 25 40	2883
	α Aquilæ	E.	69 50 55	3317	68 27 03	3336	67 03 33	3355	65 40 25	3374
	SATURN	E.	77 15 25	2852	75 42 05	2860	74 08 55	2868	72 35 55	2876

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LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.	Noon.	P. L. of Diff.	III ^h	P. L. of Diff.	VI ^h	P. L. of Diff.	IX ^h	P. L. of Diff.
8	Regulus W.	89 32 29	2886	91 05 06	2893	92 37 34	2900	94 09 53	2908
	MARS W.	55 44 03	2985	57 14 35	2992	58 44 58	3000	60 15 11	3007
	Spica W.	35 58 21	2889	37 30 54	2895	39 03 19	2901	40 35 36	2909
	α Aquilæ E.	64 17 39	3395	62 55 17	3418	61 33 21	3441	60 11 51	3466
	SATURN E.	71 03 05	2883	69 30 25	2891	67 57 55	2899	66 25 35	2907
	JUPITER E.	113 17 40	2921	111 45 48	2927	110 14 03	2934	108 42 27	2941
9	Regulus W.	101 49 06	2943	103 20 30	2950	104 51 45	2957	106 22 52	2964
	MARS W.	67 43 55	3045	69 13 12	3052	70 42 20	3060	72 11 19	3066
	Spica W.	48 14 53	2941	49 46 20	2947	51 17 39	2954	52 48 50	2960
	α Aquilæ E.	53 31 49	3614	52 13 30	3649	50 55 49	3688	49 38 49	3729
	SATURN E.	58 46 22	2945	57 15 00	2953	55 43 48	2960	54 12 45	2967
	JUPITER E.	101 06 42	2976	99 35 59	2982	98 05 24	2989	96 34 57	2995
10	MARS W.	79 34 11	3100	81 02 21	3106	82 30 23	3112	83 58 18	3118
	Spica W.	60 22 50	2989	61 53 16	2996	63 23 34	3001	64 53 45	3006
	α Aquilæ E.	43 25 45	3989	42 13 55	4058	41 03 12	4130	39 53 39	4211
	SATURN E.	46 39 49	3005	45 09 42	3013	43 39 45	3020	42 09 57	3027
	JUPITER E.	89 04 41	3026	87 35 00	3032	86 05 27	3038	84 36 01	3043
11	MARS W.	91 16 07	3146	92 43 21	3151	94 10 29	3156	95 37 31	3160
	Spica W.	72 23 06	3031	73 52 40	3036	75 22 08	3040	76 51 31	3044
	Antares W.	27 50 46	3253	29 15 52	3237	30 41 17	3224	32 06 58	3213
	SATURN E.	34 43 23	3069	33 14 35	3078	31 45 59	3087	30 17 34	3098
	JUPITER E.	77 10 26	3069	75 41 38	3073	74 12 55	3077	72 44 17	3082
12	MARS W.	102 51 22	3181	104 17 54	3184	105 44 22	3188	107 10 46	3190
	Spica W.	84 17 13	3063	85 46 08	3066	87 14 59	3069	88 43 47	3070
	Antares W.	39 17 57	3181	40 44 29	3177	42 11 06	3173	43 37 48	3168
	JUPITER E.	65 22 25	3101	63 54 16	3103	62 26 10	3105	60 58 07	3109
13	MARS W.	114 22 01	3201	115 48 09	3202	117 14 16	3203	118 40 22	3204
	Spica W.	96 07 09	3079	97 35 44	3081	99 04 17	3081	100 32 50	3082
	Antares W.	50 52 11	3157	52 19 12	3154	53 46 16	3152	55 13 23	3149
	JUPITER E.	53 38 37	3118	52 10 49	3119	50 43 03	3120	49 15 18	3121
14	Spica W.	107 55 34	3078	109 24 10	3077	110 52 48	3074	112 21 29	3073
	Antares W.	62 29 44	3135	63 57 11	3133	65 24 41	3129	66 52 16	3125
	JUPITER E.	41 56 35	3119	40 28 49	3119	39 01 02	3117	37 33 13	3116
	SUN E.	131 45 36	3463	130 24 31	3461	129 03 23	3458	127 42 12	3455
15	Antares W.	74 11 24	3102	75 39 31	3096	77 07 45	3091	78 36 06	3085
	JUPITER E.	30 13 35	3105	28 45 31	3102	27 17 24	3099	25 49 13	3097
	SUN E.	120 55 12	3432	119 33 32	3427	118 11 46	3420	116 49 52	3414
16	Antares W.	85 59 50	3049	87 29 02	3041	88 58 24	3032	90 27 57	3022
	α Aquilæ W.	41 18 13	4053	42 29 00	3986	43 40 53	3923	44 53 49	3866
	SATURN W.	25 39 27	3072	27 08 11	3055	28 37 16	3039	30 06 40	3023
	SUN E.	109 58 24	3375	108 35 39	3366	107 12 44	3357	105 49 38	3346
17	Antares W.	97 58 39	2973	99 29 25	2962	101 00 25	2950	102 31 40	2939
	α Aquilæ W.	51 12 08	3627	52 30 13	3587	53 49 01	3549	55 08 31	3513

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LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.	Midnight.	P. L. of Diff.	XVh	P. L. of Diff.	XVIIIh	P. L. of Diff.	XXIh	P. L. of Diff.
		° ' "		° ' "		° ' "		° ' "	
8	Regulus W.	95 42 02	2915	97 14 02	2923	98 45 52	2930	100 17 33	2936
	MARS W.	61 45 15	3015	63 15 09	3023	64 44 53	3030	66 14 29	3038
	Spica W.	42 07 44	2915	43 39 44	2922	45 11 35	2928	46 43 17	2934
	α Aquilæ E.	58 50 49	3492	57 30 16	3520	56 10 14	3549	54 50 44	3581
	SATURN E.	64 53 25	2915	63 21 25	2922	61 49 34	2930	60 17 53	2938
	JUPITER E.	107 11 00	2949	105 39 43	2955	104 08 34	2962	102 37 34	2969
9	Regulus W.	107 53 50	2970	109 24 40	2977	110 55 21	2983	112 25 55	2989
	MARS W.	73 40 10	3073	75 08 53	3080	76 37 27	3087	78 05 53	3093
	Spica W.	54 19 53	2966	55 50 48	2972	57 21 36	2977	58 52 17	2984
	α Aquilæ E.	48 22 33	3773	47 07 03	3821	45 52 23	3873	44 38 36	3928
	SATURN E.	52 41 51	2974	51 11 06	2982	49 40 31	2989	48 10 05	2997
	JUPITER E.	95 04 38	3001	93 34 27	3008	92 04 24	3014	90 34 29	3020
10	MARS W.	85 26 06	3124	86 53 47	3130	88 21 20	3135	89 48 47	3141
	Spica W.	66 23 50	3012	67 53 48	3017	69 23 40	3022	70 53 26	3026
	α Aquilæ E.	38 45 23	4300	37 38 30	4397	36 33 06	4505	35 29 18	4628
	SATURN E.	40 40 18	3035	39 10 49	3043	37 41 30	3052	36 12 22	3060
	JUPITER E.	83 06 41	3048	81 37 28	3053	80 08 21	3059	78 39 21	3068
11	MARS W.	97 04 28	3165	98 31 19	3170	99 58 04	3173	101 24 45	3177
	Spica W.	78 20 49	3048	79 50 02	3052	81 19 10	3056	82 48 14	3060
	Antares W.	33 32 52	3804	34 58 56	3197	36 25 09	3190	37 51 30	3185
	SATURN E.	28 49 22	3110	27 21 24	3121	25 53 40	3134	24 26 12	3148
	JUPITER E.	71 15 45	3086	69 47 18	3090	68 18 56	3093	66 50 38	3097
12	MARS W.	108 37 07	3193	110 03 24	3195	111 29 39	3198	112 55 51	3199
	Spica W.	90 12 33	3073	91 41 15	3075	93 09 55	3077	94 38 33	3078
	Antares W.	45 04 35	3167	46 31 24	3164	47 58 16	3161	49 25 12	3158
	JUPITER E.	59 30 08	3111	58 02 12	3113	56 34 18	3115	55 06 27	3116
13	MARS W.	120 06 27	3204	121 32 31	3204	122 58 36	3204	124 24 41	3203
	Spica W.	102 01 22	3082	103 29 54	3081	104 58 26	3081	106 26 59	3079
	Antares W.	56 40 33	3148	58 07 45	3144	59 35 01	3141	61 02 21	3138
	JUPITER E.	47 47 33	3121	46 19 49	3120	44 52 05	3120	43 24 20	3120
14	Spica W.	113 50 12	3070	115 18 58	3067	116 47 48	3064	118 16 42	3059
	Antares W.	68 19 55	3121	69 47 39	3117	71 15 28	3112	72 43 23	3108
	JUPITER E.	36 05 23	3114	34 37 30	3111	33 09 34	3110	31 41 36	3107
	SUN E.	126 20 58	3451	124 59 39	3446	123 38 15	3442	122 16 46	3438
15	Antares W.	80 04 34	3078	81 33 10	3072	83 01 54	3065	84 30 47	3056
	JUPITER E.	24 21 00	3096	22 52 43	3094	21 24 25	3091	19 56 05	3089
	SUN E.	115 27 51	3407	114 05 42	3400	112 43 25	3392	111 20 59	3384
16	Antares W.	91 57 42	3014	93 27 38	3005	94 57 45	2993	96 28 06	2984
	α Aquilæ W.	46 07 43	3812	47 22 33	3761	48 38 16	3714	49 54 48	3669
	SATURN W.	31 36 24	3009	33 06 26	2994	34 36 46	2980	36 07 24	2965
	SUN E.	104 26 20	3337	103 02 51	3325	101 39 09	3314	100 15 14	3302
17	Antares W.	104 03 09	2927	105 34 53	2915	107 06 53	2902	108 39 09	2890
	α Aquilæ W.	56 28 41	3479	57 49 29	3445	59 10 55	3412	60 32 58	3380

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Day of the Month	Name and Direction of Object.	Noon.	P. L. of Diff.	IIIh	P. L. of Diff.	VIh	P. L. of Diff.	IXh	P. L. of Diff.
17	SATURN W. SUN E.	37 38 20 98 51 05	2952 3290	39 09 33 97 26 42	2937 3278	40 41 05 96 02 05	2922 3265	42 12 56 94 37 13	2908 3252
18	Antares W. α Aquilæ W. SATURN W. SUN E.	110 11 41 61 55 37 49 56 53 87 28 46	2876 3351 2832 3179	111 44 30 63 18 49 51 30 39 86 02 12	2863 3323 2816 3163	113 17 36 64 42 34 53 04 46 84 35 19	2849 3294 2800 3147	114 51 00 66 06 53 54 39 14 83 08 06	2836 3266 2784 3131
19	α Aquilæ W. SATURN W. SUN E.	73 16 17 62 37 00 75 46 58	3138 2699 3044	74 43 40 64 13 41 74 17 40	3115 2681 3026	76 11 31 65 50 46 72 48 00	3091 2663 3008	77 39 51 67 28 15 71 17 57	3069 2645 2989
20	α Aquilæ W. SATURN W. α Pegasi W. JUPITER W. SUN E.	85 08 21 75 41 51 37 33 24 31 51 21 63 41 47	2962 2553 3138 2594 2894	86 39 22 77 21 50 39 00 47 33 30 24 62 09 21	2942 2535 3078 2574 2875	88 10 47 79 02 15 40 29 23 35 09 54 60 36 30	2923 2516 3024 2553 2855	89 42 37 80 43 06 41 59 06 36 49 53 59 03 14	2904 2497 2973 2534 2836
21	α Aquilæ W. SATURN W. α Pegasi W. JUPITER W. SUN E.	97 27 30 89 13 55 49 42 30 45 16 41 51 10 40	2821 2404 2762 2435 2741	99 01 31 90 57 24 51 17 48 46 59 26 49 34 55	2805 2385 2727 2416 2722	100 35 52 92 41 20 52 53 52 48 42 38 47 58 45	2792 2367 2692 2397 2704	102 10 30 94 25 42 54 30 42 50 26 17 46 22 11	2781 2349 2660 2378 2687
22	SATURN W. α Pegasi W. JUPITER W. SUN E.	103 14 01 62 45 04 59 11 16 38 13 33	2262 2321 2287 2605	105 00 56 64 25 48 60 57 34 36 34 45	2246 2497 2270 2591	106 48 15 66 07 06 62 44 18 34 55 37	2230 2473 2253 2577	108 35 58 67 48 57 64 31 27 33 16 10	2214 2450 2237 2564
26	SUN W. MARS E. Spica E.	18 22 17 77 35 26 90 54 27	2435 2121 2005	20 04 58 75 44 59 89 01 01	2418 2125 2009	21 48 08 73 54 38 87 07 40	2404 2129 2012	23 31 39 72 04 23 85 14 25	2394 2134 2017
27	SUN W. MARS E. Spica E. Antares E.	32 11 09 62 55 28 75 50 28 121 13 41	2388 2170 2052 2115	33 55 01 61 06 16 73 58 15 119 23 04	2392 2180 2061 2120	35 38 47 59 17 18 72 06 16 117 32 36	2398 2189 2070 2128	37 22 25 57 28 34 70 14 31 115 42 19	2405 2200 2080 2136
28	SUN W. MARS E. Spica E. Antares E.	45 57 32 48 29 05 60 59 54 106 34 15	2455 2260 2139 2186	47 39 49 46 42 06 59 09 54 104 45 26	2466 2272 2151 2197	49 21 50 44 55 26 57 20 13 102 56 54	2479 2286 2165 2209	51 03 33 43 09 06 55 30 53 101 08 40	2492 2300 2178 2223
29	SUN W. MARS E. Spica E. Antares E.	59 27 19 34 22 47 46 29 34 92 12 34	2564 2375 2253 2294	61 07 03 32 38 37 44 42 26 90 26 25	2580 2392 2270 2308	62 46 25 30 54 51 42 55 42 88 40 37	2596 2408 2285 2323	64 25 26 29 11 27 41 09 21 86 55 11	2612 2424 2302 2339
30	SUN W. MARS E. Spica E. Antares E.	72 34 57 20 40 16 32 23 47 78 13 53	2695 2507 2389 2421	74 11 43 18 59 12 30 39 56 76 30 48	2712 2524 2408 2438	75 48 07 17 18 32 28 56 32 74 48 07	2729 2540 2426 2455	77 24 08 15 38 15 27 13 34 73 05 50	2746 2557 2445 2472

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.	P. L. of Diff.	XVh	P. L. of Diff.	XVIIIh	P. L. of Diff.	XXIh	P. L. of Diff.
			° ' "		° ' "		° ' "		° ' "	
17	SATURN	W.	43 45 05	2893	45 17 33	2878	46 50 20	2862	48 23 27	2848
	SUN	E.	93 12 05	3238	91 46 41	3224	90 21 00	3209	88 55 02	3194
18	Antares	W.	116 24 41	2822	117 58 40	2808	119 32 57	2794	121 07 33	2779
	α Aquilæ	W.	67 31 44	3240	68 57 06	3214	70 22 59	3188	71 49 23	3163
	SATURN	W.	56 14 03	2768	57 49 13	2750	59 24 46	2733	61 00 42	2716
	SUN	E.	81 40 34	3114	80 12 42	3097	78 44 29	3079	77 15 54	3062
19	α Aquilæ	W.	79 08 39	3046	80 37 55	3025	82 07 37	3003	83 37 46	2982
	SATURN	W.	69 06 09	2627	70 44 27	2609	72 23 10	2591	74 02 18	2572
	SUN	E.	69 47 30	2970	68 16 40	2952	66 45 27	2932	65 13 49	2913
20	α Aquilæ	W.	91 14 51	2886	92 47 28	2868	94 20 28	2852	95 53 49	2836
	SATURN	W.	82 24 23	2479	84 06 06	2460	85 48 16	2441	87 30 52	2422
	α Pegasi	W.	43 29 53	2925	45 01 40	2881	46 34 23	2839	48 08 00	2798
	JUPITER	W.	38 30 19	2514	40 11 13	2494	41 52 34	2474	43 34 24	2455
	SUN	E.	57 29 33	2817	55 55 27	2798	54 20 56	2779	52 46 00	2760
21	α Aquilæ	W.	103 45 23	2769	105 20 31	2759	106 55 53	2750	108 31 27	2741
	SATURN	W.	96 10 30	2331	97 55 45	2313	99 41 25	2296	101 27 31	2279
	α Pegasi	W.	56 08 15	2631	57 46 28	2601	59 25 22	2572	61 04 55	2546
	JUPITER	W.	52 10 24	2359	53 54 57	2341	55 39 57	2323	57 25 23	2304
	SUN	E.	44 45 13	2669	43 07 52	2652	41 30 08	2635	39 52 01	2620
22	SATURN	W.	110 24 05	2199	112 12 34	2184	114 01 25	2170	115 50 38	2155
	α Pegasi	W.	69 31 20	2129	71 14 13	2110	72 57 34	2090	74 41 23	2071
	JUPITER	W.	66 19 00	2221	68 06 56	2205	69 55 16	2190	71 43 58	2174
	SUN	E.	31 36 26	2554	29 56 27	2545	28 16 15	2537	26 35 52	2529
26	SUN	W.	25 15 24	2387	26 59 18	2384	28 43 16	2384	30 27 14	2386
	MARS	E.	70 14 16	2141	68 24 19	2147	66 34 31	2154	64 44 54	2161
	Spica	E.	83 21 18	2023	81 28 20	2030	79 35 32	2036	77 42 54	2044
27	SUN	W.	39 05 52	2414	40 49 07	2423	42 32 09	2432	44 14 58	2443
	MARS	E.	55 40 06	2216	53 51 54	2223	52 04 00	2234	50 16 23	2247
	Spica	E.	68 23 01	2091	66 31 48	2102	64 40 52	2114	62 50 14	2126
	Antares	E.	113 52 14	2145	112 02 23	2153	110 12 45	2163	108 23 22	2174
28	SUN	W.	52 44 58	2506	54 26 03	2520	56 06 48	2534	57 47 14	2549
	MARS	E.	41 23 07	2315	39 37 30	2330	37 52 14	2344	36 07 19	2360
	Spica	E.	53 41 53	2193	51 53 15	2208	50 04 59	2223	48 17 05	2238
	Antares	E.	99 20 46	2236	97 33 12	2250	95 45 59	2264	93 59 06	2278
29	SUN	W.	66 04 05	2629	67 42 21	2645	69 20 15	2661	70 57 47	2678
	MARS	E.	27 28 26	2441	25 45 49	2457	24 03 35	2473	22 21 44	2489
	Spica	E.	39 23 24	2319	37 37 52	2336	35 52 45	2353	34 08 03	2371
	Antares	E.	85 10 09	2355	83 25 30	2371	81 41 14	2388	79 57 22	2404
30	SUN	W.	78 59 47	2763	80 35 04	2780	82 09 58	2797	83 44 30	2815
	MARS	E.	13 58 21	2574	12 18 50	2591	10 39 43	2607	9 00 58	2624
	Spica	E.	25 31 04	2467	23 49 03	2487	22 07 31	2509	20 26 29	2530
	Antares	E.	71 23 57	2489	69 42 28	2507	68 01 24	2524	66 20 44	2540

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S					Sidereal Time of Semi-diameter Passing Meridian.	Equation of Time, to be Added to Apparent Time.	Diff. for 1 Hour.
		Apparent Right Ascension.	Diff. for 1 Hour.	Apparent Declination.	Diff. for 1 Hour.	Semi-diameter.			
		h m s	s	° ' "	"	' "	s	m s	s
Wed.	1	6 36 51.46	+ 10.352	N.23 10 43.6	- 9.10	15 45.70	68.78	3 23.63	0.494
Thur.	2	6 40 59.76	10.341	23 06 52.9	10.12	15 45.70	68.75	3 35.34	0.483
Frid.	3	6 45 07.79	10.329	23 02 37.9	11.12	15 45.70	68.71	3 46.79	0.471
Sat.	4	6 49 15.53	+ 10.316	22 57 58.8	- 12.13	15 45.70	68.67	3 57.94	0.458
SUN.	5	6 53 22.95	10.303	22 52 55.7	13.12	15 45.71	68.63	4 08.77	0.445
Mon.	6	6 57 30.04	10.289	22 47 28.7	14.12	15 45.71	68.58	4 19.27	0.431
Tues.	7	7 01 36.78	+ 10.274	22 41 37.9	- 15.11	15 45.73	68.53	4 29.43	0.416
Wed.	8	7 05 43.15	10.259	22 35 23.5	16.09	15 45.74	68.48	4 39.22	0.401
Thur.	9	7 09 49.15	10.243	22 28 45.6	17.06	15 45.76	68.43	4 48.64	0.385
Frid.	10	7 13 54.75	+ 10.226	22 21 44.3	- 18.03	15 45.79	68.37	4 57.66	0.368
Sat.	11	7 17 59.95	10.208	22 14 20.0	18.99	15 45.82	68.31	5 06.27	0.351
SUN.	12	7 22 04.72	10.190	22 06 32.7	19.94	15 45.85	68.25	5 14.47	0.333
Mon.	13	7 26 09.05	+ 10.172	21 58 22.4	- 20.89	15 45.88	68.19	5 22.22	0.315
Tues.	14	7 30 12.94	10.153	21 49 49.6	21.83	15 45.92	68.12	5 29.54	0.296
Wed.	15	7 34 16.37	10.133	21 40 54.4	22.77	15 45.96	68.05	5 36.39	0.276
Thur.	16	7 38 19.33	+ 10.114	21 31 36.8	- 23.69	15 46.00	67.98	5 42.76	0.257
Frid.	17	7 42 21.80	10.093	21 21 57.2	24.60	15 46.05	67.91	5 48.67	0.236
Sat.	18	7 46 23.78	10.072	21 11 55.8	25.50	15 46.11	67.84	5 54.08	0.215
SUN.	19	7 50 25.26	+ 10.051	21 01 32.9	- 26.40	15 46.17	67.77	5 58.99	0.194
Mon.	20	7 54 26.21	10.030	20 50 48.5	27.29	15 46.23	67.69	6 03.38	0.173
Tues.	21	7 58 26.64	10.007	20 39 43.0	28.16	15 46.29	67.61	6 07.24	0.150
Wed.	22	8 02 26.53	+ 9.984	20 28 16.6	- 29.03	15 46.37	67.53	6 10.56	0.127
Thur.	23	8 06 25.86	9.961	20 16 29.6	29.88	15 46.45	67.45	6 13.33	0.104
Frid.	24	8 10 24.62	9.938	20 04 22.2	30.72	15 46.54	67.37	6 15.54	0.081
Sat.	25	8 14 22.81	+ 9.913	19 51 54.7	- 31.56	15 46.63	67.29	6 17.16	0.056
SUN.	26	8 18 20.40	9.888	19 39 07.4	32.38	15 46.72	67.21	6 18.19	0.031
Mon.	27	8 22 17.40	9.863	19 26 00.5	33.19	15 46.82	67.12	6 18.63	0.006
Tues.	28	8 26 13.78	+ 9.836	19 12 34.4	- 33.98	15 46.93	67.04	6 18.46	0.020
Wed.	29	8 30 09.54	9.811	18 58 49.2	34.77	15 47.04	66.95	6 17.67	0.045
Thur.	30	8 34 04.68	9.785	18 44 45.4	35.54	15 47.16	66.86	6 16.26	0.071
Frid.	31	8 37 59.20	9.759	18 30 23.1	36.31	15 47.28	66.78	6 14.22	0.097
Sat.	32	8 41 53.09	+ 9.733	N.18 15 42.6	- 37.06	15 47.40	66.69	6 11.57	0.123

NOTE.—The mean time of semidiameter passing the meridian may be found by subtracting 0.19^s from the sidereal time.
The sign — prefixed to the hourly change of declination indicates that north declinations are decreasing.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S				Equation of Time, to be Subtracted from Mean Time.	Diff. for 1 Hour.	Sidereal Time, or Right Ascension of Mean Sun.
		Apparent Right Ascension.	Diff. for 1 Hour.	Apparent Declination.	Diff. for 1 Hour.			
		^h ^m ^s	^s	[°] ['] ["]	["]	^m ^s	^s	^h ^m ^s
Wed.	1	6 36 50.87	+ 10.350	N.23 10 44.2	- 9.10	3 23.60	- 0.494	6 33 27.27
Thur.	2	6 40 59.14	10.339	23 06 53.5	10.12	3 35.31	0.483	6 37 23.83
Frid.	3	6 45 07.14	10.327	23 02 38.6	11.12	3 46.76	0.471	6 41 20.38
Sat.	4	6 49 14.85	+ 10.314	22 57 59.6	- 12.13	3 57.91	- 0.458	6 45 16.94
SUN.	5	6 53 22.24	10.301	22 52 56.6	13.12	4 08.74	0.445	6 49 13.50
Mon.	6	6 57 29.29	10.287	22 47 29.7	14.12	4 19.24	0.431	6 53 10.05
Tues.	7	7 01 36.01	+ 10.272	22 41 39.0	- 15.11	4 29.40	- 0.416	6 57 06.61
Wed.	8	7 05 42.36	10.257	22 35 24.8	16.09	4 39.19	0.401	7 01 03.17
Thur.	9	7 09 48.33	10.241	22 28 47.0	17.06	4 48.61	0.385	7 04 59.72
Frid.	10	7 13 53.91	+ 10.224	22 21 45.9	- 18.03	4 57.63	- 0.368	7 08 56.28
Sat.	11	7 17 59.08	10.207	22 14 21.6	18.99	5 06.24	0.351	7 12 52.84
SUN.	12	7 22 03.83	10.189	22 06 34.4	19.94	5 14.44	0.333	7 16 49.39
Mon.	13	7 26 08.14	+ 10.171	21 58 24.3	- 20.89	5 22.19	- 0.315	7 20 45.95
Tues.	14	7 30 12.01	10.152	21 49 51.6	21.83	5 29.51	0.296	7 24 42.50
Wed.	15	7 34 15.42	10.132	21 40 56.5	22.77	5 36.36	0.276	7 28 39.06
Thur.	16	7 38 18.36	+ 10.113	21 31 39.1	- 23.69	5 42.74	- 0.257	7 32 35.62
Frid.	17	7 42 20.83	10.092	21 21 59.6	24.60	5 48.66	0.236	7 36 32.17
Sat.	18	7 46 22.79	10.071	21 11 58.4	25.50	5 54.06	0.215	7 40 28.73
SUN.	19	7 50 24.25	+ 10.050	21 01 35.5	- 26.40	5 58.97	- 0.194	7 44 25.28
Mon.	20	7 54 25.20	10.029	20 50 51.2	27.29	6 03.36	0.173	7 48 21.84
Tues.	21	7 58 25.62	10.006	20 39 45.9	28.16	6 07.22	0.150	7 52 18.40
Wed.	22	8 02 25.50	+ 9.983	20 28 19.6	- 29.03	6 10.55	- 0.127	7 56 14.95
Thur.	23	8 06 24.83	9.960	20 16 32.7	29.88	6 13.32	0.104	8 00 11.51
Frid.	24	8 10 23.59	9.937	20 04 25.4	30.72	6 15.53	0.081	8 04 08.06
Sat.	25	8 14 21.77	+ 9.912	19 51 58.0	- 31.56	6 17.15	- 0.056	8 08 04.62
SUN.	26	8 18 19.36	9.887	19 39 10.8	32.38	6 18.19	0.031	8 12 01.17
Mon.	27	8 22 16.36	9.862	19 26 04.0	33.19	6 18.63	- 0.006	8 15 57.73
Tues.	28	8 26 12.74	+ 9.836	19 12 38.0	- 33.98	6 18.46	+ 0.020	8 19 54.28
Wed.	29	8 30 08.51	9.811	18 58 52.9	34.77	6 17.67	0.045	8 23 50.84
Thur.	30	8 34 03.66	9.785	18 44 49.1	35.54	6 16.27	0.071	8 27 47.39
Frid.	31	8 37 58.18	9.759	18 30 26.9	36.31	6 14.23	0.097	8 31 43.95
Sat.	32	8 41 52.08	+ 9.733	N.18 15 46.4	- 37.06	6 11.58	+ 0.123	8 35 40.50

NOTE.—The semidiameter for mean noon may be assumed the same as that for apparent noon.
 The sign — prefixed to the hourly change of declination indicates that north declinations are decreasing.

Diff. for 1 Hour,
 + 9.8565".
 (Table III.)

AT GREENWICH MEAN NOON.								
Day of the Month.	Day of the Year.	THE SUN'S				Logarithm of the Radius Vector of the Earth.	Diff. for 1 Hour.	Mean Time of Sidereal Noon.
		TRUE LONGITUDE.		Diff. for 1 Hour.	LATITUDE.			
		λ	λ'					
1	182	98 28 05.8	27 37.0	+ 143.01	+ 0.32	0.007 2075	+ 1.4	h m s 17 23 41.28
2	183	99 25 17.8	24 48.9	142.99	0.46	0.007 2098	+ 0.6	17 19 45.37
3	184	100 22 29.5	22 00.4	142.98	0.59	0.007 2101	- 0.2	17 15 49.46
4	185	101 19 40.9	19 11.7	+ 142.97	+ 0.71	0.007 2086	- 1.0	17 11 53.55
5	186	102 16 52.1	16 22.7	142.96	0.82	0.007 2054	1.7	17 07 57.64
6	187	103 14 03.1	13 33.5	142.96	0.91	0.007 2004	2.4	17 04 01.73
7	188	104 11 14.0	10 44.3	+ 142.96	+ 0.97	0.007 1939	- 3.0	17 00 05.81
8	189	105 08 24.9	7 55.0	142.96	1.01	0.007 1858	3.7	16 56 09.90
9	190	106 05 35.9	5 05.9	142.96	1.03	0.007 1762	4.3	16 52 13.99
10	191	107 02 47.1	2 16.9	+ 142.97	+ 1.01	0.007 1651	- 4.9	16 48 18.08
11	192	107 59 58.4	59 28.1	142.98	0.96	0.007 1525	5.6	16 44 22.17
12	193	108 57 10.1	56 39.6	142.99	0.90	0.007 1383	6.2	16 40 26.26
13	194	109 54 22.2	53 51.5	+ 143.01	+ 0.81	0.007 1225	- 6.9	16 36 30.35
14	195	110 51 34.6	51 03.8	143.03	0.71	0.007 1052	7.6	16 32 34.44
15	196	111 48 47.7	48 16.7	143.05	0.60	0.007 0861	8.3	16 28 38.53
16	197	112 46 01.3	45 30.2	+ 143.08	+ 0.47	0.007 0653	- 9.1	16 24 42.62
17	198	113 43 15.6	42 44.4	143.11	0.34	0.007 0426	9.9	16 20 46.71
18	199	114 40 30.6	39 59.2	143.14	0.22	0.007 0180	10.7	16 16 50.80
19	200	115 37 46.3	37 14.8	+ 143.17	+ 0.12	0.006 9913	- 11.6	16 12 54.89
20	201	116 35 02.8	34 31.1	143.20	+ 0.03	0.006 9623	12.6	16 08 58.98
21	202	117 32 20.1	31 48.2	143.24	- 0.03	0.006 9310	13.6	16 05 03.07
22	203	118 29 38.1	29 06.2	+ 143.27	- 0.06	0.006 8973	- 14.6	16 01 07.16
23	204	119 26 56.9	26 24.8	143.30	0.05	0.006 8610	15.7	15 57 11.25
24	205	120 24 16.3	23 44.1	143.32	- 0.02	0.006 8221	16.8	15 53 15.34
25	206	121 21 36.4	21 04.0	+ 143.35	+ 0.04	0.006 7805	- 17.9	15 49 19.43
26	207	122 18 57.1	18 24.6	143.37	0.13	0.006 7364	18.9	15 45 23.52
27	208	123 16 18.4	15 45.7	143.39	0.24	0.006 6897	19.9	15 41 27.61
28	209	124 13 40.1	13 07.3	+ 143.42	+ 0.37	0.006 6406	- 20.9	15 37 31.70
29	210	125 11 02.3	10 29.4	143.44	0.50	0.006 5893	21.8	15 33 35.79
30	211	126 08 25.1	7 52.0	143.46	0.63	0.006 5358	22.7	15 29 39.89
31	212	127 05 48.4	5 15.2	143.48	0.75	0.006 4803	23.5	15 25 43.98
32	213	128 03 12.2	2 38.9	+ 143.51	+ 0.86	0.006 4230	- 24.2	15 21 48.07

NOTE.—The longitudes in the column λ are referred to the true equinox of their own date, while those in the column λ' are referred to the mean equinox of the beginning of the Besselian fictitious year.

Diff. for 1 Hour,
— 9.8296".
(Table II.)

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month.	SEMIDIAMETER.		HORIZONTAL PARALLAX.				UPPER TRANSIT.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 Hour.	Midnight.	Diff. for 1 Hour.	Meridian of Greenwich.	Diff. for 1 Hour.	Noon.
							h m	m	d
1	15 49.5	15 42.8	57 58.8	-2.08	57 34.2	-2.02	5 50.8	+2.04	6.2
2	15 36.3	15 30.1	57 10.3	1.94	56 47.6	1.84	6 39.1	2.00	7.2
3	15 24.2	15 18.8	56 26.1	1.73	56 06.0	1.61	7 27.0	1.99	8.2
4	15 13.7	15 09.0	55 47.4	-1.48	55 30.4	-1.35	8 14.9	+2.00	9.2
5	15 04.8	15 01.0	55 14.8	1.23	55 00.8	1.10	9 02.9	2.01	10.2
6	14 57.6	14 54.6	54 48.3	0.98	54 37.3	0.86	9 51.2	2.02	11.2
7	14 51.9	14 49.7	54 27.6	-0.75	54 19.3	-0.63	10 39.5	+2.01	12.2
8	14 47.8	14 46.3	54 12.4	0.52	54 06.8	0.41	11 27.5	1.98	13.2
9	14 45.1	14 44.3	54 02.5	0.30	53 59.4	-0.19	12 14.7	1.95	14.2
10	14 43.8	14 43.7	53 57.8	-0.08	53 57.5	+0.03	13 00.9	+1.90	15.2
11	14 44.0	14 44.8	53 58.6	+0.15	54 01.2	0.28	13 46.0	1.86	16.2
12	14 45.9	14 47.5	54 05.4	0.42	54 11.2	0.55	14 30.1	1.82	17.2
13	14 49.5	14 52.1	54 18.8	+0.70	54 28.1	+0.86	15 13.6	+1.81	18.2
14	14 55.2	14 58.7	54 39.4	1.02	54 52.6	1.18	15 57.1	1.82	19.2
15	15 02.9	15 07.6	55 07.8	1.35	55 25.0	1.52	16 41.1	1.86	20.2
16	15 12.8	15 18.6	55 44.2	+1.68	56 05.4	+1.84	17 26.5	+1.93	21.2
17	15 24.9	15 31.6	56 28.4	1.98	56 53.0	2.11	18 14.1	2.04	22.2
18	15 38.7	15 46.1	57 19.1	2.22	57 46.3	2.29	19 04.6	2.18	23.2
19	15 53.7	16 01.4	58 14.2	+2.33	58 42.4	+2.33	19 58.6	+2.33	24.2
20	16 08.9	16 16.3	59 10.1	2.23	59 37.0	2.18	20 56.2	2.47	25.2
21	16 23.2	16 29.4	60 02.4	2.01	60 25.3	1.78	21 56.6	2.56	26.2
22	16 34.8	16 39.3	60 45.2	+1.50	61 01.5	+1.18	22 58.6	+2.58	27.2
23	16 42.5	16 44.5	61 13.5	+0.80	61 20.8	+0.40	0		28.2
24	16 45.2	16 44.4	61 23.2	-0.01	61 20.5	-0.43	0 00.2	2.53	0.0
25	16 42.4	16 39.0	61 12.8	-0.83	61 00.5	-1.20	1 00.1	+2.44	1.0
26	16 34.5	16 29.0	60 43.9	1.53	60 23.7	1.81	1 57.3	2.33	2.0
27	16 22.6	16 15.7	60 00.4	2.03	59 34.9	2.20	2 51.7	2.22	3.0
28	16 08.3	16 00.6	59 07.7	-2.30	58 39.6	-2.35	3 43.8	+2.13	4.0
29	15 52.9	15 45.2	58 11.3	2.35	57 43.2	2.31	4 34.1	2.07	5.0
30	15 37.8	15 30.6	57 15.8	2.23	56 49.6	2.12	5 23.3	2.04	6.0
31	15 23.9	15 17.6	56 24.9	1.99	56 01.9	1.84	6 11.9	2.02	7.0
32	15 11.9	15 06.7	55 40.8	-1.68	55 21.7	-1.51	7 00.3	+2.01	8.0

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
WEDNESDAY 1.					FRIDAY 3.				
0	12 12 44.21	+ 2.1418	S. 2 08 32.7	-10.693	0	13 53 57.91	+ 2.0912	S. 9 59 54.8	-8.683
1	12 14 52.66	2.1398	2 19 13.6	10.669	1	13 56 03.38	2.0912	10 08 34.1	8.626
2	12 17 00.99	2.1378	2 29 53.0	10.643	2	13 58 08.85	2.0911	10 17 09.9	8.568
3	12 19 09.20	2.1359	2 40 30.8	10.617	3	14 00 14.31	2.0909	10 25 42.2	8.509
4	12 21 17.30	2.1340	2 51 07.0	10.590	4	14 02 19.76	2.0908	10 34 11.0	8.450
5	12 23 25.28	2.1321	3 01 41.6	10.562	5	14 04 25.21	2.0908	10 42 36.2	8.390
6	12 25 33.15	2.1302	3 12 14.5	10.533	6	14 06 30.66	2.0907	10 50 57.8	8.330
7	12 27 40.91	2.1283	3 22 45.6	10.503	7	14 08 36.10	2.0907	10 59 15.8	8.269
8	12 29 48.57	2.1267	3 33 14.9	10.473	8	14 10 41.55	2.0908	11 07 30.1	8.208
9	12 31 56.12	2.1250	3 43 42.4	10.442	9	14 12 47.00	2.0908	11 15 40.7	8.146
10	12 34 03.57	2.1234	3 54 08.0	10.410	10	14 14 52.45	2.0909	11 23 47.6	8.084
11	12 36 10.93	2.1218	4 04 31.6	10.378	11	14 16 57.91	2.0910	11 31 50.8	8.021
12	12 38 18.19	2.1202	4 14 53.3	10.344	12	14 19 03.37	2.0911	11 39 50.1	7.957
13	12 40 25.36	2.1187	4 25 12.9	10.310	13	14 21 08.84	2.0912	11 47 45.6	7.893
14	12 42 32.44	2.1173	4 35 30.5	10.276	14	14 23 14.32	2.0913	11 55 37.3	7.829
15	12 44 39.44	2.1159	4 45 46.0	10.240	15	14 25 19.80	2.0915	12 03 25.1	7.764
16	12 46 46.35	2.1145	4 55 59.3	10.203	16	14 27 25.30	2.0917	12 11 09.0	7.699
17	12 48 53.18	2.1132	5 06 10.4	10.166	17	14 29 30.81	2.0919	12 18 49.0	7.633
18	12 50 59.93	2.1119	5 16 19.2	10.128	18	14 31 36.33	2.0922	12 26 25.0	7.567
19	12 53 06.61	2.1107	5 26 25.7	10.089	19	14 33 41.87	2.0924	12 33 57.0	7.500
20	12 55 13.21	2.1094	5 36 29.9	10.050	20	14 35 47.42	2.0927	12 41 25.0	7.433
21	12 57 19.74	2.1082	5 46 31.7	10.010	21	14 37 52.99	2.0930	12 48 48.9	7.365
22	12 59 26.20	2.1072	5 56 31.1	9.969	22	14 39 58.58	2.0932	12 56 08.8	7.297
23	13 01 32.60	+ 2.1061	S. 6 06 28.0	- 9.928	23	14 42 04.18	+ 2.0935	S. 13 03 24.6	- 7.228
THURSDAY 2.					SATURDAY 4.				
0	13 03 38.93	+ 2.1050	S. 6 16 22.4	- 9.886	0	14 44 09.80	+ 2.0938	S. 13 10 36.2	- 7.159
1	13 05 45.20	2.1041	6 26 14.3	9.843	1	14 46 15.44	2.0942	13 17 43.7	7.090
2	13 07 51.42	2.1032	6 36 03.6	9.799	2	14 48 21.10	2.0945	13 24 47.0	7.019
3	13 09 57.58	2.1022	6 45 50.2	9.755	3	14 50 26.78	2.0949	13 31 46.0	6.948
4	13 12 03.68	2.1013	6 55 34.2	9.711	4	14 52 32.49	2.0952	13 38 40.8	6.878
5	13 14 09.74	2.1005	7 05 15.5	9.665	5	14 54 38.21	2.0956	13 45 31.4	6.808
6	13 16 15.74	2.0997	7 14 54.0	9.618	6	14 56 43.96	2.0961	13 52 17.7	6.736
7	13 18 21.70	2.0990	7 24 29.7	9.572	7	14 58 49.74	2.0965	13 58 59.7	6.663
8	13 20 27.62	2.0982	7 34 02.6	9.525	8	15 00 55.54	2.0968	14 05 37.3	6.590
9	13 22 33.49	2.0975	7 43 32.7	9.477	9	15 03 01.36	2.0972	14 12 10.5	6.517
10	13 24 39.32	2.0968	7 52 59.9	9.428	10	15 05 07.21	2.0977	14 18 39.4	6.445
11	13 26 45.11	2.0962	8 02 24.1	9.378	11	15 07 13.08	2.0981	14 25 03.9	6.371
12	13 28 50.87	2.0957	8 11 45.3	9.328	12	15 09 18.98	2.0986	14 31 23.9	6.297
13	13 30 56.59	2.0952	8 21 03.5	9.278	13	15 11 24.91	2.0990	14 37 39.5	6.223
14	13 33 02.29	2.0947	8 30 18.7	9.227	14	15 13 30.86	2.0994	14 43 50.6	6.148
15	13 35 07.95	2.0942	8 39 30.8	9.176	15	15 15 36.84	2.0998	14 49 57.2	6.072
16	13 37 13.59	2.0937	8 48 39.8	9.123	16	15 17 42.84	2.1003	14 55 59.2	5.996
17	13 39 19.20	2.0933	8 57 45.6	9.070	17	15 19 48.88	2.1008	15 01 56.7	5.920
18	13 41 24.79	2.0929	9 06 48.2	9.017	18	15 21 54.94	2.1012	15 07 49.6	5.843
19	13 43 30.35	2.0925	9 15 47.6	8.963	19	15 24 01.03	2.1017	15 13 37.9	5.767
20	13 45 35.89	2.0922	9 24 43.7	8.908	20	15 26 07.14	2.1022	15 19 21.6	5.690
21	13 47 41.42	2.0920	9 33 36.5	8.853	21	15 28 13.29	2.1027	15 25 00.7	5.612
22	13 49 46.93	2.0917	9 42 26.0	8.797	22	15 30 19.46	2.1031	15 30 35.1	5.534
23	13 51 52.43	2.0915	9 51 12.1	8.740	23	15 32 25.66	2.1036	15 36 04.8	5.456
24	13 53 57.91	+ 2.0912	S. 9 59 54.8	- 8.683	24	15 34 31.89	+ 2.1040	S. 15 41 29.8	- 5.378

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
SUNDAY 5.					TUESDAY 7.				
0	15 34 31.89	+ 2.1040	S. 15 41 29.8	- 5.378	0	17 15 52.05	+ 2.1122	S. 18 24 07.2	- 1.327
1	15 36 38.14	2.1044	15 46 50.1	5.298	1	17 17 58.78	2.1119	18 25 24.2	1.240
2	15 38 44.42	2.1049	15 52 05.6	5.219	2	17 20 05.48	2.1116	18 26 36.0	1.152
3	15 40 50.73	2.1054	15 57 16.4	5.140	3	17 22 12.17	2.1113	18 27 42.5	1.064
4	15 42 57.07	2.1058	16 02 22.4	5.059	4	17 24 18.84	2.1109	18 28 43.7	0.976
5	15 45 03.43	2.1062	16 07 23.5	4.979	5	17 26 25.48	2.1105	18 29 39.6	0.888
6	15 47 09.81	2.1067	16 12 19.9	4.899	6	17 28 32.10	2.1101	18 30 30.3	0.802
7	15 49 16.23	2.1072	16 17 11.4	4.818	7	17 30 38.69	2.1096	18 31 15.8	0.714
8	15 51 22.67	2.1075	16 21 58.0	4.737	8	17 32 45.25	2.1091	18 31 56.0	0.627
9	15 53 29.13	2.1079	16 26 39.8	4.656	9	17 34 51.78	2.1086	18 32 31.0	0.539
10	15 55 35.62	2.1083	16 31 16.7	4.574	10	17 36 58.28	2.1081	18 33 00.7	0.451
11	15 57 42.13	2.1087	16 35 48.7	4.492	11	17 39 04.75	2.1075	18 33 25.1	0.363
12	15 59 48.66	2.1091	16 40 15.8	4.410	12	17 41 11.18	2.1069	18 33 44.3	0.277
13	16 01 55.22	2.1095	16 44 37.9	4.328	13	17 43 17.58	2.1063	18 33 58.3	0.189
14	16 04 01.80	2.1098	16 48 55.1	4.245	14	17 45 23.94	2.1057	18 34 07.0	0.102
15	16 06 08.40	2.1102	16 53 07.3	4.162	15	17 47 30.26	2.1050	18 34 10.5	- 0.014
16	16 08 15.02	2.1105	16 57 14.6	4.079	16	17 49 36.54	2.1042	18 34 08.7	+ 0.073
17	16 10 21.66	2.1108	17 01 16.8	3.995	17	17 51 42.77	2.1035	18 34 01.8	0.159
18	16 12 28.32	2.1112	17 05 14.0	3.912	18	17 53 48.96	2.1028	18 33 49.5	0.247
19	16 14 35.00	2.1114	17 09 06.2	3.828	19	17 55 55.11	2.1021	18 33 32.2	0.333
20	16 16 41.69	2.1117	17 12 53.4	3.744	20	17 58 01.21	2.1013	18 33 09.6	0.420
21	16 18 48.40	2.1120	17 16 35.5	3.660	21	18 00 07.27	2.1005	18 32 41.8	0.507
22	16 20 55.13	2.1122	17 20 12.6	3.576	22	18 02 13.27	2.0996	18 32 08.8	0.593
23	16 23 01.87	+ 2.1125	S. 17 23 44.6	- 3.491	23	18 04 19.22	+ 2.0987	S. 18 31 30.6	+ 0.679
MONDAY 6.					WEDNESDAY 8.				
0	16 25 08.63	+ 2.1127	S. 17 27 11.5	- 3.406	0	18 06 25.12	+ 2.0979	S. 18 30 47.3	+ 0.765
1	16 27 15.40	2.1129	17 30 33.3	3.321	1	18 08 30.97	2.0970	18 29 58.8	0.851
2	16 29 22.18	2.1132	17 33 50.0	3.236	2	18 10 36.76	2.0960	18 29 05.2	0.937
3	16 31 28.98	2.1133	17 37 01.6	3.151	3	18 12 42.49	2.0950	18 28 06.4	1.023
4	16 33 35.78	2.1134	17 40 08.1	3.066	4	18 14 48.16	2.0940	18 27 02.5	1.108
5	16 35 42.59	2.1136	17 43 09.5	2.980	5	18 16 53.77	2.0930	18 25 53.4	1.194
6	16 37 49.41	2.1137	17 46 05.7	2.893	6	18 18 59.32	2.0920	18 24 39.2	1.278
7	16 39 56.23	2.1137	17 48 56.7	2.807	7	18 21 04.81	2.0909	18 23 20.0	1.363
8	16 42 03.06	2.1139	17 51 42.5	2.721	8	18 23 10.23	2.0898	18 21 55.6	1.449
9	16 44 09.90	2.1139	17 54 23.2	2.635	9	18 25 15.59	2.0887	18 20 26.1	1.533
10	16 46 16.73	2.1139	17 56 58.7	2.548	10	18 27 20.87	2.0875	18 18 51.6	1.618
11	16 48 23.57	2.1140	17 59 29.0	2.462	11	18 29 26.09	2.0864	18 17 12.0	1.702
12	16 50 30.41	2.1140	18 01 54.1	2.375	12	18 31 31.24	2.0852	18 15 27.4	1.786
13	16 52 37.25	2.1140	18 04 14.0	2.288	13	18 33 36.32	2.0840	18 13 37.7	1.869
14	16 54 44.09	2.1139	18 06 28.6	2.200	14	18 35 41.32	2.0827	18 11 43.1	1.953
15	16 56 50.92	2.1138	18 08 38.0	2.113	15	18 37 46.25	2.0815	18 09 43.4	2.037
16	16 58 57.75	2.1137	18 10 42.2	2.027	16	18 39 51.10	2.0802	18 07 38.7	2.119
17	17 01 04.57	2.1137	18 12 41.2	1.939	17	18 41 55.87	2.0789	18 05 29.1	2.202
18	17 03 11.39	2.1136	18 14 34.9	1.852	18	18 44 00.57	2.0777	18 03 14.5	2.284
19	17 05 18.20	2.1133	18 16 23.4	1.765	19	18 46 05.19	2.0763	18 00 55.0	2.367
20	17 07 24.99	2.1132	18 18 06.7	1.678	20	18 48 09.72	2.0749	17 58 30.5	2.448
21	17 09 31.78	2.1130	18 19 44.7	1.590	21	18 50 14.18	2.0736	17 56 01.2	2.530
22	17 11 38.55	2.1127	18 21 17.5	1.502	22	18 52 18.55	2.0722	17 53 26.9	2.612
23	17 13 45.31	2.1125	18 22 45.0	1.414	23	18 54 22.84	2.0707	17 50 47.8	2.693
24	17 15 52.05	+ 2.1122	S. 18 24 07.2	- 1.327	24	18 56 27.04	+ 2.0693	S. 17 48 03.8	+ 2.773

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
THURSDAY 9.					SATURDAY 11.				
0	h m s		° ' "		0	h m s		° ' "	
0	18 56 27.04	+ 2.0693	S. 17 48 03.8	+ 2.773	0	20 33 53.37	+ 1.9883	S. 14 08 38.7	+ 6.212
1	18 58 31.16	2.0679	17 45 15.0	2.853	1	20 35 52.62	1.9867	14 02 24.2	6.273
2	19 00 35.19	2.0664	17 42 21.4	2.934	2	20 37 51.77	1.9849	13 56 06.0	6.333
3	19 02 39.13	2.0649	17 39 22.9	3.014	3	20 39 50.81	1.9832	13 49 44.2	6.393
4	19 04 42.98	2.0635	17 36 19.7	3.093	4	20 41 49.75	1.9815	13 43 18.8	6.452
5	19 06 46.75	2.0620	17 33 11.7	3.173	5	20 43 48.59	1.9799	13 36 49.9	6.512
6	19 08 50.42	2.0603	17 29 59.0	3.252	6	20 45 47.34	1.9782	13 30 17.4	6.571
7	19 10 53.99	2.0588	17 26 41.5	3.331	7	20 47 45.98	1.9765	13 23 41.4	6.628
8	19 12 57.48	2.0573	17 23 19.3	3.408	8	20 49 44.52	1.9749	13 17 02.0	6.686
9	19 15 00.87	2.0557	17 19 52.5	3.486	9	20 51 42.97	1.9733	13 10 19.1	6.743
10	19 17 04.16	2.0541	17 16 21.0	3.564	10	20 53 41.32	1.9717	13 03 32.8	6.799
11	19 19 07.36	2.0525	17 12 44.8	3.642	11	20 55 39.57	1.9701	12 56 43.2	6.855
12	19 21 10.46	2.0508	17 09 04.0	3.718	12	20 57 37.73	1.9685	12 49 50.2	6.911
13	19 23 13.46	2.0492	17 05 18.6	3.795	13	20 59 35.79	1.9669	12 42 53.9	6.966
14	19 25 16.37	2.0477	17 01 28.6	3.871	14	21 01 33.76	1.9653	12 35 54.3	7.020
15	19 27 19.18	2.0459	16 57 34.1	3.947	15	21 03 31.63	1.9637	12 28 51.5	7.074
16	19 29 21.88	2.0442	16 53 35.0	4.023	16	21 05 29.41	1.9622	12 21 45.4	7.128
17	19 31 24.48	2.0426	16 49 31.4	4.098	17	21 07 27.10	1.9607	12 14 36.1	7.181
18	19 33 26.99	2.0409	16 45 23.3	4.172	18	21 09 24.70	1.9592	12 07 23.7	7.233
19	19 35 29.39	2.0392	16 41 10.8	4.245	19	21 11 22.21	1.9577	12 00 08.1	7.286
20	19 37 31.69	2.0375	16 36 53.9	4.319	20	21 13 19.63	1.9563	11 52 49.4	7.337
21	19 39 33.89	2.0357	16 32 32.5	4.393	21	21 15 16.97	1.9549	11 45 27.7	7.388
22	19 41 35.98	2.0340	16 28 06.7	4.466	22	21 17 14.22	1.9535	11 38 02.9	7.438
23	19 43 37.97	+ 2.0322	S. 16 23 36.6	+ 4.538	23	21 19 11.39	+ 1.9522	S. 11 30 35.1	+ 7.488
FRIDAY 10.					SUNDAY 12.				
0	h m s		° ' "		0	h m s		° ' "	
0	19 45 39.85	+ 2.0305	S. 16 19 02.1	+ 4.611	0	21 21 08.48	+ 1.9507	S. 11 23 04.3	+ 7.538
1	19 47 41.63	2.0287	16 14 23.3	4.683	1	21 23 05.48	1.9491	11 15 30.6	7.587
2	19 49 43.30	2.0270	16 09 40.2	4.754	2	21 25 02.41	1.9482	11 07 53.9	7.636
3	19 51 44.87	2.0253	16 04 52.8	4.825	3	21 26 59.26	1.9468	11 00 14.3	7.683
4	19 53 46.34	2.0236	16 00 01.2	4.895	4	21 28 56.03	1.9455	10 52 31.9	7.731
5	19 55 47.70	2.0217	15 55 05.4	4.965	5	21 30 52.72	1.9442	10 44 46.6	7.778
6	19 57 48.95	2.0199	15 50 05.4	5.035	6	21 32 49.34	1.9430	10 36 58.5	7.824
7	19 59 50.09	2.0182	15 45 01.2	5.104	7	21 34 45.88	1.9418	10 29 07.7	7.870
8	20 01 51.13	2.0165	15 39 52.9	5.173	8	21 36 42.36	1.9407	10 21 14.1	7.916
9	20 03 52.07	2.0147	15 34 40.4	5.242	9	21 38 38.76	1.9395	10 13 17.8	7.960
10	20 05 52.90	2.0129	15 29 23.9	5.309	10	21 40 35.10	1.9384	10 05 18.9	8.004
11	20 07 53.62	2.0111	15 24 03.3	5.377	11	21 42 31.37	1.9372	9 57 17.3	8.048
12	20 09 54.23	2.0093	15 18 38.7	5.443	12	21 44 27.57	1.9362	9 49 13.1	8.092
13	20 11 54.74	2.0076	15 13 10.1	5.510	13	21 46 23.71	1.9351	9 41 06.3	8.134
14	20 13 55.14	2.0058	15 07 37.5	5.577	14	21 48 19.78	1.9341	9 32 57.0	8.176
15	20 15 55.44	2.0041	15 02 00.9	5.642	15	21 50 15.80	1.9332	9 24 45.2	8.218
16	20 17 55.63	2.0022	14 56 20.4	5.707	16	21 52 11.76	1.9322	9 16 30.8	8.260
17	20 19 55.71	2.0005	14 50 36.1	5.771	17	21 54 07.66	1.9312	9 08 14.0	8.300
18	20 21 55.69	1.9988	14 44 47.9	5.836	18	21 56 03.50	1.9303	8 59 54.8	8.341
19	20 23 55.57	1.9971	14 38 55.8	5.900	19	21 57 59.29	1.9295	8 51 33.1	8.381
20	20 25 55.34	1.9952	14 32 59.9	5.963	20	21 59 55.04	1.9287	8 43 09.1	8.419
21	20 27 55.00	1.9935	14 27 00.2	6.026	21	22 01 50.73	1.9278	8 34 42.8	8.458
22	20 29 54.56	1.9918	14 20 56.8	6.088	22	22 03 46.37	1.9270	8 26 14.2	8.496
23	20 31 54.02	1.9901	14 14 49.6	6.151	23	22 05 41.97	1.9262	8 17 43.3	8.533
24	20 33 53.37	+ 1.9883	S. 14 08 38.7	+ 6.212	24	22 07 37.52	+ 1.9255	S. 8 09 10.2	+ 8.570

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
MONDAY 13.					WEDNESDAY 15.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
0	22 07 37.52	+ 1.9255	S. 8 09 10.2	+ 8.570	0	23 39 56.71	+ 1.9372	S. 0 45 20.0	+ 9.712
1	22 09 33.03	1.9248	8 00 34.9	8.607	1	23 41 52.98	1.9386	0 35 37.0	9.722
2	22 11 28.50	1.9242	7 51 57.4	8.643	2	23 43 49.34	1.9401	0 25 53.4	9.732
3	22 13 23.94	1.9236	7 43 17.8	8.678	3	23 45 45.79	1.9415	0 16 09.2	9.741
4	22 15 19.33	1.9230	7 34 36.0	8.713	4	23 47 42.32	1.9429	S. 0 06 24.5	9.749
5	22 17 14.70	1.9225	7 25 52.2	8.748	5	23 49 38.94	1.9444	N. 0 03 20.7	9.757
6	22 19 10.03	1.9219	7 17 06.3	8.782	6	23 51 35.65	1.9460	0 13 06.3	9.763
7	22 21 05.33	1.9215	7 08 18.4	8.814	7	23 53 32.46	1.9477	0 22 52.3	9.770
8	22 23 00.61	1.9211	6 59 28.6	8.847	8	23 55 29.38	1.9494	0 32 38.7	9.776
9	22 24 55.86	1.9207	6 50 36.8	8.880	9	23 57 26.39	1.9511	0 42 25.4	9.781
10	22 26 51.09	1.9202	6 41 43.0	8.912	10	23 59 23.51	1.9529	0 52 12.4	9.786
11	22 28 46.29	1.9199	6 32 47.4	8.943	11	0 01 20.74	1.9547	1 01 59.7	9.790
12	22 30 41.48	1.9197	6 23 49.9	8.973	12	0 03 18.08	1.9567	1 11 47.2	9.793
13	22 32 36.65	1.9194	6 14 50.6	9.003	13	0 05 15.54	1.9586	1 21 34.9	9.796
14	22 34 31.81	1.9192	6 05 49.5	9.033	14	0 07 13.11	1.9606	1 31 22.7	9.798
15	22 36 26.95	1.9190	5 56 46.7	9.062	15	0 09 10.81	1.9627	1 41 10.6	9.799
16	22 38 22.09	1.9189	5 47 42.1	9.091	16	0 11 08.63	1.9647	1 50 58.6	9.800
17	22 40 17.22	1.9188	5 38 35.8	9.118	17	0 13 06.57	1.9668	2 00 46.6	9.800
18	22 42 12.35	1.9188	5 29 27.9	9.146	18	0 15 04.65	1.9691	2 10 34.6	9.800
19	22 44 07.48	1.9187	5 20 18.3	9.173	19	0 17 02.86	1.9713	2 20 22.6	9.799
20	22 46 02.60	1.9188	5 11 07.2	9.198	20	0 19 01.21	1.9737	2 30 10.5	9.797
21	22 47 57.73	1.9188	5 01 54.5	9.225	21	0 20 59.70	1.9760	2 39 58.2	9.794
22	22 49 52.86	1.9190	4 52 40.2	9.251	22	0 22 58.33	1.9784	2 49 45.8	9.792
23	22 51 48.01	+ 1.9192	S. 4 43 24.4	+ 9.275	23	0 24 57.11	+ 1.9809	N. 2 59 33.2	+ 9.788
TUESDAY 14.					THURSDAY 16.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
0	22 53 43.16	+ 1.9193	S. 4 34 07.2	+ 9.299	0	0 26 56.04	+ 1.9834	N. 3 09 20.3	+ 9.783
1	22 55 38.33	1.9195	4 24 48.5	9.322	1	0 28 55.12	1.9859	3 19 07.1	9.778
2	22 57 33.50	1.9198	4 15 28.5	9.345	2	0 30 54.35	1.9886	3 28 53.6	9.772
3	22 59 28.70	1.9202	4 06 07.1	9.368	3	0 32 53.75	1.9912	3 38 39.7	9.765
4	23 01 23.92	1.9205	3 56 44.3	9.391	4	0 34 53.30	1.9939	3 48 25.4	9.758
5	23 03 19.16	1.9208	3 47 20.2	9.412	5	0 36 53.02	1.9967	3 58 10.7	9.751
6	23 05 14.42	1.9213	3 37 54.9	9.433	6	0 38 52.91	1.9996	4 07 55.5	9.742
7	23 07 09.72	1.9218	3 28 28.3	9.453	7	0 40 52.97	2.0024	4 17 39.7	9.732
8	23 09 05.04	1.9223	3 19 00.6	9.473	8	0 42 53.20	2.0053	4 27 23.3	9.722
9	23 11 00.40	1.9230	3 09 31.6	9.493	9	0 44 53.61	2.0084	4 37 06.3	9.712
10	23 12 55.80	1.9236	3 00 01.5	9.511	10	0 46 54.21	2.0115	4 46 48.7	9.700
11	23 14 51.23	1.9242	2 50 30.3	9.528	11	0 48 54.99	2.0145	4 56 30.3	9.688
12	23 16 46.71	1.9250	2 40 58.1	9.546	12	0 50 55.95	2.0177	5 06 11.2	9.675
13	23 18 42.23	1.9257	2 31 24.8	9.563	13	0 52 57.11	2.0209	5 15 51.3	9.661
14	23 20 37.80	1.9266	2 21 50.5	9.579	14	0 54 58.46	2.0241	5 25 30.5	9.647
15	23 22 33.42	1.9274	2 12 15.3	9.595	15	0 57 00.00	2.0273	5 35 08.9	9.632
16	23 24 29.09	1.9283	2 02 39.1	9.611	16	0 59 01.74	2.0307	5 44 46.3	9.615
17	23 26 24.82	1.9293	1 53 02.0	9.626	17	1 01 03.69	2.0342	5 54 22.7	9.598
18	23 28 20.61	1.9302	1 43 24.0	9.640	18	1 03 05.85	2.0377	6 03 58.1	9.581
19	23 30 16.45	1.9312	1 33 45.2	9.653	19	1 05 08.21	2.0411	6 13 32.4	9.563
20	23 32 12.36	1.9324	1 24 05.6	9.666	20	1 07 10.78	2.0447	6 23 05.6	9.544
21	23 34 08.34	1.9336	1 14 25.3	9.678	21	1 09 13.57	2.0483	6 32 37.7	9.525
22	23 36 04.39	1.9347	1 04 44.2	9.691	22	1 11 16.58	2.0520	6 42 08.6	9.504
23	23 38 00.51	1.9360	0 55 02.4	9.702	23	1 13 19.81	2.0557	6 51 38.2	9.482
24	23 39 56.71	+ 1.9372	S. 0 45 20.0	+ 9.712	24	1 15 23.26	+ 2.0594	N. 7 01 06.4	+ 9.459

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
FRIDAY 17.					SUNDAY 19.				
0	h m s	s	N. ° ' "	"	0	h m s	s	N. ° ' "	"
1	1 15 23.26	+ 2.0594	7 01 06.4	+ 9.459	1	2 59 27.02	+ 2.2912	13 52 27.1	+ 7.303
2	1 17 26.94	2.0632	7 10 33.3	9.437	2	3 01 44.66	2.2968	13 59 43.2	7.233
3	1 19 30.85	2.0672	7 19 58.8	9.413	3	3 04 02.64	2.3025	14 06 55.0	7.161
4	1 21 35.00	2.0711	7 29 22.8	9.388	4	3 06 20.96	2.3081	14 14 02.5	7.088
5	1 23 39.38	2.0750	7 38 45.3	9.362	5	3 08 39.61	2.3137	14 21 05.6	7.015
6	1 25 44.00	2.0790	7 48 06.2	9.335	6	3 10 58.60	2.3193	14 28 04.3	6.940
7	1 27 48.86	2.0831	7 57 25.5	9.308	7	3 13 17.93	2.3250	14 34 58.4	6.864
8	1 29 53.97	2.0872	8 06 43.2	9.281	8	3 15 37.60	2.3307	14 41 48.0	6.788
9	1 31 59.33	2.0913	8 15 59.2	9.252	9	3 17 57.61	2.3362	14 48 32.9	6.709
10	1 34 04.93	2.0955	8 25 13.4	9.221	10	3 20 17.95	2.3419	14 55 13.1	6.630
11	1 36 10.79	2.0998	8 34 25.7	9.190	11	3 22 38.64	2.3476	15 01 48.5	6.549
12	1 38 16.91	2.1042	8 43 36.2	9.159	12	3 24 59.66	2.3532	15 08 19.0	6.468
13	1 40 23.29	2.1085	8 52 44.8	9.127	13	3 27 21.03	2.3590	15 14 44.6	6.385
14	1 42 29.93	2.1129	9 01 51.4	9.093	14	3 29 42.74	2.3646	15 21 05.2	6.301
15	1 44 36.84	2.1173	9 10 56.0	9.059	15	3 32 04.78	2.3702	15 27 20.7	6.216
16	1 46 44.01	2.1217	9 19 58.6	9.023	16	3 34 27.17	2.3759	15 33 31.1	6.130
17	1 48 51.45	2.1263	9 28 58.8	8.987	17	3 36 49.89	2.3815	15 39 36.3	6.043
18	1 50 59.17	2.1310	9 37 56.9	8.950	18	3 39 12.95	2.3872	15 45 36.2	5.951
19	1 53 07.17	2.1356	9 46 52.8	8.912	19	3 41 36.35	2.3927	15 51 30.8	5.864
20	1 55 15.44	2.1402	9 55 46.4	8.873	20	3 44 00.08	2.3983	15 57 19.9	5.773
21	1 57 24.00	2.1450	10 04 37.6	8.833	21	3 46 24.15	2.4039	16 03 03.6	5.682
22	1 59 32.84	2.1497	10 13 26.4	8.793	22	3 48 48.55	2.4095	16 08 41.7	5.588
23	2 01 41.96	2.1545	10 22 12.7	8.751	23	3 51 13.29	2.4151	16 14 14.2	5.494
24	2 03 51.38	+ 2.1593	N. 10 30 56.5	+ 8.708	24	3 53 38.36	+ 2.4206	N. 16 19 41.0	+ 5.399
SATURDAY 18.					MONDAY 20.				
0	2 06 01.08	+ 2.1642	N. 10 39 37.6	+ 8.663	0	3 56 03.76	+ 2.4261	N. 16 25 02.1	+ 5.303
1	2 08 11.08	2.1692	10 48 16.1	8.619	1	3 58 29.49	2.4316	16 30 17.4	5.205
2	2 10 21.38	2.1741	10 56 51.9	8.573	2	4 00 55.55	2.4371	16 35 26.7	5.106
3	2 12 31.97	2.1791	11 05 24.9	8.527	3	4 03 21.94	2.4425	16 40 30.1	5.007
4	2 14 42.87	2.1842	11 13 55.1	8.479	4	4 05 48.65	2.4478	16 45 27.5	4.906
5	2 16 54.07	2.1892	11 22 22.4	8.430	5	4 08 15.68	2.4532	16 50 18.8	4.803
6	2 19 05.58	2.1943	11 30 46.7	8.380	6	4 10 43.03	2.4585	16 55 03.9	4.700
7	2 21 17.39	2.1994	11 39 08.0	8.329	7	4 13 10.70	2.4638	16 59 42.8	4.597
8	2 23 29.51	2.2047	11 47 26.2	8.277	8	4 15 38.69	2.4691	17 04 15.5	4.492
9	2 25 41.95	2.2099	11 55 41.2	8.224	9	4 18 06.99	2.4742	17 08 41.8	4.384
10	2 27 54.70	2.2151	12 03 53.1	8.171	10	4 20 35.60	2.4794	17 13 01.6	4.277
11	2 30 07.76	2.2203	12 12 01.7	8.116	11	4 23 04.52	2.4845	17 17 15.0	4.169
12	2 32 21.14	2.2257	12 20 07.0	8.060	12	4 25 33.74	2.4896	17 21 21.9	4.059
13	2 34 34.84	2.2310	12 28 08.9	8.003	13	4 28 03.27	2.4947	17 25 22.1	3.948
14	2 36 48.86	2.2363	12 36 07.3	7.944	14	4 30 33.10	2.4996	17 29 15.7	3.837
15	2 39 03.20	2.2417	12 44 02.2	7.885	15	4 33 03.22	2.5045	17 33 02.6	3.725
16	2 41 17.87	2.2472	12 51 53.5	7.825	16	4 35 33.64	2.5094	17 36 42.7	3.611
17	2 43 32.86	2.2526	12 59 41.2	7.763	17	4 38 04.35	2.5142	17 40 15.9	3.496
18	2 45 48.18	2.2580	13 07 25.1	7.701	18	4 40 35.34	2.5189	17 43 42.2	3.381
19	2 48 03.82	2.2635	13 15 05.3	7.638	19	4 43 06.62	2.5237	17 47 01.6	3.265
20	2 50 19.80	2.2690	13 22 41.6	7.573	20	4 45 38.18	2.5282	17 50 14.0	3.148
21	2 52 36.10	2.2745	13 30 14.0	7.507	21	4 48 10.01	2.5328	17 53 19.3	3.029
22	2 54 52.74	2.2801	13 37 42.4	7.440	22	4 50 42.12	2.5373	17 56 17.5	2.910
23	2 57 09.71	2.2857	13 45 06.8	7.372	23	4 53 14.49	2.5417	17 59 08.5	2.789
24	2 59 27.02	+ 2.2912	N. 13 52 27.1	+ 7.303	24	4 55 47.12	+ 2.5460	N. 18 01 52.2	+ 2.668

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
TUESDAY 21.					THURSDAY 23.				
	<i>h m s</i>	<i>s</i>	<i>° ' "</i>	<i>"</i>		<i>h m s</i>	<i>s</i>	<i>° ' "</i>	<i>"</i>
0	4 55 47.12	+ 2.5460	N.18 01 52.2	+ 2.668	0	7 01 17.44	+ 2.6434	N.17 39 20.1	- 3.709
1	4 58 20.01	2.5503	18 04 28.7	2.547	1	7 03 56.03	2.6428	17 35 33.6	3.843
2	5 00 53.16	2.5546	18 06 57.8	2.424	2	7 06 34.58	2.6421	17 31 39.0	3.976
3	5 03 26.56	2.5587	18 09 19.6	2.302	3	7 09 13.08	2.6412	17 27 36.5	4.108
4	5 06 00.21	2.5628	18 11 34.0	2.177	4	7 11 51.53	2.6403	17 23 26.0	4.240
5	5 08 34.09	2.5667	18 13 40.8	2.051	5	7 14 29.92	2.6393	17 19 07.7	4.370
6	5 11 08.21	2.5706	18 15 40.1	1.926	6	7 17 08.25	2.6382	17 14 41.6	4.501
7	5 13 42.56	2.5744	18 17 31.9	1.799	7	7 19 46.50	2.6369	17 10 07.6	4.632
8	5 16 17.14	2.5782	18 19 16.0	1.672	8	7 22 24.68	2.6356	17 05 25.8	4.761
9	5 18 51.94	2.5818	18 20 52.5	1.544	9	7 25 02.77	2.6341	17 00 36.3	4.889
10	5 21 26.95	2.5852	18 22 21.3	1.415	10	7 27 40.77	2.6326	16 55 39.1	5.017
11	5 24 02.17	2.5887	18 23 42.3	1.286	11	7 30 18.68	2.6309	16 50 34.3	5.143
12	5 26 37.60	2.5922	18 24 55.6	1.157	12	7 32 56.48	2.6292	16 45 21.9	5.269
13	5 29 13.23	2.5954	18 26 01.1	1.026	13	7 35 34.18	2.6273	16 40 02.0	5.395
14	5 31 49.05	2.5985	18 26 58.7	0.894	14	7 38 11.76	2.6253	16 34 34.5	5.520
15	5 34 25.05	2.6016	18 27 48.4	0.762	15	7 40 49.22	2.6233	16 28 59.6	5.643
16	5 37 01.24	2.6046	18 28 30.2	0.630	16	7 43 26.56	2.6212	16 23 17.3	5.766
17	5 39 37.60	2.6074	18 29 04.0	0.498	17	7 46 03.77	2.6190	16 17 27.7	5.888
18	5 42 14.13	2.6102	18 29 29.9	0.365	18	7 48 40.84	2.6167	16 11 30.8	6.008
19	5 44 50.83	2.6130	18 29 47.8	0.231	19	7 51 17.77	2.6143	16 05 26.7	6.128
20	5 47 27.69	2.6156	18 29 57.6	+ 0.097	20	7 53 54.56	2.6118	15 59 15.4	6.247
21	5 50 04.70	2.6180	18 29 59.4	- 0.038	21	7 56 31.19	2.6093	15 52 57.0	6.365
22	5 52 41.85	2.6203	18 29 53.0	0.173	22	7 59 07.67	2.6067	15 46 31.6	6.482
23	5 55 19.14	+ 2.6226	N.18 29 38.6	- 0.308	23	8 01 43.99	+ 2.6039	N.15 39 59.2	- 6.597
WEDNESDAY 22.					FRIDAY 24.				
	<i>h m s</i>	<i>s</i>	<i>° ' "</i>	<i>"</i>		<i>h m s</i>	<i>s</i>	<i>° ' "</i>	<i>"</i>
0	5 57 56.56	+ 2.6247	N.18 29 16.1	- 0.443	0	8 04 20.14	+ 2.6011	N.15 33 20.0	- 6.711
1	6 00 34.11	2.6268	18 28 45.4	0.579	1	8 06 56.12	2.5982	15 26 33.9	6.825
2	6 03 11.78	2.6288	18 28 06.6	0.715	2	8 09 31.93	2.5953	15 19 41.0	6.937
3	6 05 49.57	2.6307	18 27 19.6	0.852	3	8 12 07.56	2.5923	15 12 41.5	7.048
4	6 08 27.46	2.6323	18 26 24.4	0.988	4	8 14 43.00	2.5892	15 05 35.3	7.158
5	6 11 05.45	2.6339	18 25 21.1	1.124	5	8 17 18.26	2.5860	14 58 22.5	7.267
6	6 13 43.53	2.6354	18 24 09.5	1.262	6	8 19 53.32	2.5827	14 51 03.3	7.373
7	6 16 21.70	2.6369	18 22 49.7	1.398	7	8 22 28.19	2.5795	14 43 37.7	7.480
8	6 18 59.96	2.6382	18 21 21.8	1.534	8	8 25 02.86	2.5762	14 36 05.7	7.585
9	6 21 38.29	2.6393	18 19 45.6	1.672	9	8 27 37.33	2.5728	14 28 27.5	7.688
10	6 24 16.68	2.6403	18 18 01.2	1.809	10	8 30 11.59	2.5693	14 20 43.1	7.791
11	6 26 55.13	2.6413	18 16 08.5	1.946	11	8 32 45.64	2.5657	14 12 52.6	7.893
12	6 29 33.64	2.6422	18 14 07.7	2.083	12	8 35 19.47	2.5621	14 04 56.0	7.993
13	6 32 12.20	2.6429	18 11 58.6	2.219	13	8 37 53.09	2.5584	13 56 53.5	8.090
14	6 34 50.79	2.6435	18 09 41.4	2.356	14	8 40 26.48	2.5547	13 48 45.2	8.187
15	6 37 29.42	2.6440	18 07 15.9	2.493	15	8 42 59.65	2.5510	13 40 31.1	8.283
16	6 40 08.07	2.6443	18 04 42.2	2.629	16	8 45 32.60	2.5472	13 32 11.3	8.377
17	6 42 46.74	2.6447	18 02 00.4	2.765	17	8 48 05.32	2.5433	13 23 45.9	8.469
18	6 45 25.43	2.6448	17 59 10.4	2.901	18	8 50 37.80	2.5394	13 15 15.0	8.560
19	6 48 04.12	2.6448	17 56 12.3	3.037	19	8 53 10.05	2.5355	13 06 38.7	8.650
20	6 50 42.81	2.6448	17 53 06.0	3.173	20	8 55 42.06	2.5315	12 57 57.0	8.739
21	6 53 21.50	2.6447	17 49 51.6	3.307	21	8 58 13.83	2.5275	12 49 10.0	8.827
22	6 56 00.17	2.6443	17 46 29.2	3.441	22	9 00 45.36	2.5235	12 40 17.8	8.912
23	6 58 38.82	2.6439	17 42 58.7	3.576	23	9 03 16.65	2.5194	12 31 20.6	8.996
24	7 01 17.44	+ 2.6434	N.17 39 20.1	- 3.709	24	9 05 47.69	+ 2.5153	N.12 22 18.3	- 9.078

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
SATURDAY 25.					MONDAY 27.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
0	9 05 47.69	+ 2.5153	N. 12 22 18.3	- 9.078	0	11 01 34.80	+ 2.3118	N. 4 00 16.7	- 11.263
1	9 08 18.48	2.5112	12 13 11.2	9.159	1	11 03 53.39	2.3080	3 49 00.7	11.272
2	9 10 49.03	2.5070	12 03 59.2	9.239	2	11 06 11.76	2.3043	3 37 44.1	11.281
3	9 13 19.32	2.5028	11 54 42.5	9.318	3	11 08 29.90	2.3005	3 26 27.0	11.288
4	9 15 49.36	2.4986	11 45 21.1	9.394	4	11 10 47.82	2.2968	3 15 09.5	11.294
5	9 18 19.15	2.4943	11 35 55.2	9.468	5	11 13 05.51	2.2931	3 03 51.7	11.298
6	9 20 48.68	2.4900	11 26 24.9	9.542	6	11 15 22.98	2.2895	2 52 33.7	11.301
7	9 23 17.95	2.4857	11 16 50.2	9.614	7	11 17 40.24	2.2858	2 41 15.6	11.303
8	9 25 46.97	2.4814	11 07 11.2	9.685	8	11 19 57.28	2.2822	2 29 57.3	11.305
9	9 28 15.72	2.4771	10 57 28.0	9.754	9	11 22 14.10	2.2787	2 18 39.0	11.304
10	9 30 44.22	2.4728	10 47 40.7	9.822	10	11 24 30.72	2.2752	2 07 20.8	11.303
11	9 33 12.46	2.4684	10 37 49.4	9.888	11	11 26 47.12	2.2717	1 56 02.7	11.300
12	9 35 40.43	2.4640	10 27 54.1	9.952	12	11 29 03.32	2.2683	1 44 44.8	11.297
13	9 38 08.14	2.4597	10 17 55.1	10.014	13	11 31 19.32	2.2649	1 33 27.2	11.290
14	9 40 35.59	2.4553	10 07 52.4	10.076	14	11 33 35.11	2.2615	1 22 10.0	11.283
15	9 43 02.77	2.4508	9 57 46.0	10.136	15	11 35 50.70	2.2582	1 10 53.2	11.276
16	9 45 29.69	2.4465	9 47 36.1	10.193	16	11 38 06.10	2.2550	0 59 36.9	11.268
17	9 47 56.35	2.4422	9 37 22.8	10.250	17	11 40 21.30	2.2518	0 48 21.1	11.258
18	9 50 22.75	2.4378	9 27 06.1	10.306	18	11 42 36.31	2.2486	0 37 06.0	11.246
19	9 52 48.88	2.4333	9 16 46.1	10.359	19	11 44 51.13	2.2454	0 25 51.6	11.234
20	9 55 14.75	2.4289	9 06 23.0	10.411	20	11 47 05.76	2.2423	0 14 37.9	11.221
21	9 57 40.35	2.4245	8 55 56.8	10.461	21	11 49 20.21	2.2393	N. 0 03 25.1	11.206
22	10 00 05.69	2.4202	8 45 27.7	10.510	22	11 51 34.47	2.2362	S. 0 07 46.8	11.191
23	10 02 30.77	+ 2.4158	N. 8 34 55.6	- 10.558	23	11 53 48.55	+ 2.2332	S. 0 18 57.8	- 11.174
SUNDAY 26.					TUESDAY 28.				
0	10 04 55.59	+ 2.4114	N. 8 24 20.7	- 10.604	0	11 56 02.45	+ 2.2302	S. 0 30 07.7	- 11.156
1	10 07 20.14	2.4071	8 13 43.1	10.648	1	11 58 16.18	2.2273	0 41 16.5	11.137
2	10 09 44.44	2.4027	8 03 02.9	10.691	2	12 00 29.73	2.2245	0 52 24.1	11.117
3	10 12 08.47	2.3983	7 52 20.2	10.732	3	12 02 43.12	2.2217	1 03 30.5	11.096
4	10 14 32.24	2.3941	7 41 35.1	10.772	4	12 04 56.34	2.2189	1 14 35.6	11.074
5	10 16 55.76	2.3898	7 30 47.6	10.811	5	12 07 09.39	2.2162	1 25 39.4	11.051
6	10 19 19.01	2.3854	7 19 57.8	10.848	6	12 09 22.28	2.2135	1 36 41.7	11.027
7	10 21 42.01	2.3812	7 09 05.9	10.883	7	12 11 35.01	2.2108	1 47 42.6	11.002
8	10 24 04.75	2.3769	6 58 11.9	10.917	8	12 13 47.58	2.2082	1 58 41.9	10.976
9	10 26 27.24	2.3727	6 47 15.9	10.949	9	12 15 59.99	2.2056	2 09 39.7	10.949
10	10 28 49.47	2.3684	6 36 18.0	10.980	10	12 18 12.25	2.2032	2 20 35.8	10.921
11	10 31 11.45	2.3642	6 25 18.3	11.010	11	12 20 24.37	2.2007	2 31 30.2	10.892
12	10 33 33.18	2.3600	6 14 16.8	11.037	12	12 22 36.33	2.1982	2 42 22.8	10.862
13	10 35 54.65	2.3558	6 03 13.8	11.063	13	12 24 48.15	2.1958	2 53 13.6	10.831
14	10 38 15.88	2.3517	5 52 09.2	11.089	14	12 26 59.83	2.1934	3 04 02.5	10.799
15	10 40 36.86	2.3477	5 41 03.1	11.113	15	12 29 11.36	2.1911	3 14 49.5	10.767
16	10 42 57.60	2.3436	5 29 55.7	11.134	16	12 31 22.76	2.1888	3 25 34.5	10.733
17	10 45 18.09	2.3394	5 18 47.0	11.155	17	12 33 34.02	2.1866	3 36 17.5	10.699
18	10 47 38.33	2.3353	5 07 37.1	11.175	18	12 35 45.15	2.1844	3 46 58.4	10.663
19	10 49 58.33	2.3314	4 56 26.0	11.193	19	12 37 56.15	2.1823	3 57 37.1	10.627
20	10 52 18.10	2.3275	4 45 13.9	11.210	20	12 40 07.02	2.1802	4 08 13.6	10.590
21	10 54 37.63	2.3235	4 34 00.8	11.225	21	12 42 17.77	2.1781	4 18 47.9	10.553
22	10 56 56.92	2.3196	4 22 46.9	11.238	22	12 44 28.39	2.1760	4 29 19.9	10.513
23	10 59 15.98	2.3157	4 11 32.2	11.252	23	12 46 38.89	2.1740	4 39 49.5	10.473
24	11 01 34.80	+ 2.3118	N. 4 00 16.7	- 11.263	24	12 48 49.27	+ 2.1721	S. 4 50 16.7	- 10.433

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
WEDNESDAY 29.					FRIDAY 31.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
0	12 48 49.27	+ 2.1721	S. 4 50 16.7	- 10.433	0	14 31 31.59	+ 2.1194	S. 12 11 19.5	- 7.713
1	12 50 59.54	2.1702	5 00 41.5	10.393	1	14 33 38.74	2.1190	12 19 00.2	7.643
2	12 53 09.69	2.1683	5 11 03.8	10.351	2	14 35 45.87	2.1187	12 26 36.6	7.572
3	12 55 19.73	2.1665	5 21 23.6	10.308	3	14 37 52.98	2.1183	12 34 08.8	7.501
4	12 57 29.67	2.1647	5 31 40.8	10.265	4	14 40 00.06	2.1179	12 41 36.7	7.430
5	12 59 39.50	2.1629	5 41 55.4	10.221	5	14 42 07.13	2.1176	12 49 00.4	7.359
6	13 01 49.22	2.1612	5 52 07.3	10.175	6	14 44 14.17	2.1172	12 56 19.8	7.288
7	13 03 58.84	2.1595	6 02 16.4	10.129	7	14 46 21.19	2.1169	13 03 34.9	7.215
8	13 06 08.36	2.1579	6 12 22.8	10.083	8	14 48 28.20	2.1167	13 10 45.6	7.142
9	13 08 17.79	2.1563	6 22 26.4	10.036	9	14 50 35.19	2.1163	13 17 51.9	7.068
10	13 10 27.12	2.1547	6 32 27.1	9.988	10	14 52 42.16	2.1161	13 24 53.8	6.995
11	13 12 36.36	2.1532	6 42 25.0	9.940	11	14 54 49.12	2.1158	13 31 51.3	6.921
12	13 14 45.51	2.1518	6 52 19.9	9.890	12	14 56 56.06	2.1156	13 38 44.3	6.847
13	13 16 54.57	2.1503	7 02 11.8	9.840	13	14 59 02.99	2.1154	13 45 32.9	6.773
14	13 19 03.54	2.1488	7 12 00.7	9.789	14	15 01 09.91	2.1152	13 52 17.0	6.698
15	13 21 12.43	2.1475	7 21 46.5	9.738	15	15 03 16.81	2.1150	13 58 56.6	6.623
16	13 23 21.24	2.1462	7 31 29.2	9.685	16	15 05 23.71	2.1148	14 05 31.7	6.547
17	13 25 29.97	2.1448	7 41 08.7	9.632	17	15 07 30.59	2.1146	14 12 02.2	6.470
18	13 27 38.62	2.1436	7 50 45.1	9.579	18	15 09 37.46	2.1145	14 18 28.1	6.394
19	13 29 47.20	2.1424	8 00 18.2	9.525	19	15 11 44.33	2.1144	14 24 49.5	6.318
20	13 31 55.71	2.1412	8 09 48.1	9.471	20	15 13 51.19	2.1143	14 31 06.3	6.241
21	13 34 04.14	2.1399	8 19 14.7	9.416	21	15 15 58.04	2.1142	14 37 18.4	6.163
22	13 36 12.50	2.1388	8 28 38.0	9.360	22	15 18 04.88	2.1139	14 43 25.8	6.085
23	13 38 20.80	+ 2.1377	S. 8 37 57.9	- 9.303	23	15 20 11.71	+ 2.1138	S. 14 49 28.6	- 6.008
THURSDAY 30.					SATURDAY, AUGUST 1.				
0	13 40 29.03	+ 2.1367	S. 8 47 14.3	- 9.245	0	15 22 18.54	+ 2.1138	S. 14 55 26.7	- 5.929
1	13 42 37.20	2.1356	8 56 27.3	9.188	PHASES OF THE MOON.				
2	13 44 45.30	2.1346	9 05 36.9	9.130					
3	13 46 53.35	2.1337	9 14 42.9	9.070					
4	13 49 01.34	2.1327	9 23 45.3	9.011					
5	13 51 09.27	2.1318	9 32 44.2	8.952	d h m ,				
6	13 53 17.15	2.1309	9 41 39.5	8.891					
7	13 55 24.98	2.1301	9 50 31.1	8.829					
8	13 57 32.76	2.1292	9 59 19.0	8.768					
9	13 59 40.48	2.1283	10 08 03.2	8.706	☾ First Quarter . . . July	1	09	02.0	
10	14 01 48.16	2.1277	10 16 43.7	8.643	○ Full Moon	9	05	43.2	
11	14 03 55.80	2.1269	10 25 20.4	8.579	☾ Last Quarter	17	07	24.2	
12	14 06 03.39	2.1262	10 33 53.2	8.515	● New Moon	24	00	46.1	
13	14 08 10.94	2.1255	10 42 22.2	8.452	☾ First Quarter	30	19	14.7	
14	14 10 18.45	2.1248	10 50 47.4	8.388	d h				
15	14 12 25.91	2.1241	10 59 08.7	8.322					
16	14 14 33.34	2.1236	11 07 26.0	8.255					
17	14 16 40.74	2.1230	11 15 39.3	8.189					
18	14 18 48.10	2.1223	11 23 48.7	8.123	☾ Apogee July	10	08.5		
19	14 20 55.42	2.1217	11 31 54.0	8.055	☾ Perigee	23	23.7		
20	14 23 02.71	2.1213	11 39 55.3	7.988					
21	14 25 09.98	2.1208	11 47 52.5	7.920					
22	14 27 17.21	2.1202	11 55 45.7	7.852					
23	14 29 24.41	2.1198	12 03 34.7	7.782					
24	14 31 31.59	+ 2.1194	S. 12 11 19.5	- 7.713					

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Noon.	P. L. of Diff.	IIIh	P. L. of Diff.	VIh	P. L. of Diff.	IXh	P. L. of Diff.
			° ' "		° ' "		° ' "		° ' "	
1	SUN	W.	85 18 39	2831	86 52 26	2848	88 25 52	2864	89 58 57	2881
	VENUS	W.	40 07 15	2876	41 40 04	2891	43 12 34	2905	44 44 46	2919
	Regulus	W.	35 18 23	2523	36 59 04	2538	38 39 24	2552	40 19 25	2565
	Antares	E.	64 40 27	2558	63 00 35	2576	61 21 07	2593	59 42 03	2612
	α Aquilæ	E.	113 23 40	2985	111 53 09	2990	110 22 44	2995	108 52 25	3001
	SATURN	E.	124 12 04	2501	122 30 52	2515	120 50 00	2530	119 09 28	2545
2	SUN	W.	97 39 06	2962	99 10 07	2977	100 40 48	2993	102 11 10	3007
	VENUS	W.	52 21 23	2989	53 51 49	3003	55 21 58	3017	56 51 50	3030
	Regulus	W.	48 34 52	2634	50 13 01	2647	51 50 52	2660	53 28 25	2673
	MARS	W.	5 31 34	2768	7 06 44	2782	8 41 35	2797	10 16 07	2812
	Antares	E.	51 32 49	2701	49 56 11	2720	48 19 58	2739	46 44 10	2758
	α Aquilæ	E.	101 23 01	3043	99 53 41	3053	98 24 33	3063	96 55 38	3074
	SATURN	E.	110 51 48	2615	109 13 14	2629	107 34 59	2643	105 57 02	2657
3	SUN	W.	109 38 27	3080	111 07 01	3095	112 35 17	3108	114 03 17	3121
	VENUS	W.	64 17 01	3096	65 45 15	3109	67 13 14	3120	68 40 59	3133
	Regulus	W.	61 31 51	2737	63 07 42	2749	64 43 17	2761	66 18 36	2772
	MARS	W.	18 04 07	2880	19 36 51	2894	21 09 18	2906	22 41 29	2919
	Antares	E.	38 51 36	2861	37 18 27	2883	35 45 47	2907	34 13 37	2933
	α Aquilæ	E.	89 34 35	3135	88 07 08	3148	86 39 57	3162	85 13 02	3176
	SATURN	E.	97 51 46	2721	96 15 34	2733	94 39 38	2745	93 03 58	2756
4	SUN	W.	121 19 22	3184	122 45 50	3197	124 12 03	3208	125 38 03	3220
	VENUS	W.	75 56 10	3189	77 22 32	3200	78 48 41	3210	80 14 38	3220
	Regulus	W.	74 11 29	2827	75 45 22	2838	77 19 01	2848	78 52 27	2857
	MARS	W.	30 18 28	2978	31 49 08	2989	33 19 34	3000	34 49 47	3010
	Spica	W.	20 42 19	2859	22 15 30	2866	23 48 33	2872	25 21 28	2878
	α Aquilæ	E.	78 02 43	3250	76 37 33	3267	75 12 43	3283	73 48 12	3300
	SATURN	E.	85 09 24	2812	83 35 12	2823	82 01 14	2833	80 27 29	2843
5	VENUS	W.	87 21 31	3267	88 46 22	3276	90 11 02	3284	91 35 33	3292
	Regulus	W.	86 36 37	2902	88 08 53	2911	89 40 58	2919	91 12 53	2927
	MARS	W.	42 17 43	3059	43 46 43	3068	45 15 32	3077	46 44 10	3084
	Spica	W.	33 04 01	2912	34 36 05	2919	36 08 00	2925	37 39 47	2932
	α Aquilæ	E.	66 50 44	3394	65 28 21	3415	64 06 21	3437	62 44 46	3460
	SATURN	E.	72 41 50	2889	71 09 17	2898	69 36 56	2906	68 04 45	2915
	JUPITER	E.	118 05 33	2909	116 33 26	2917	115 01 29	2925	113 29 42	2932
6	Regulus	W.	98 50 03	2963	100 21 02	2969	101 51 53	2976	103 22 36	2982
	VENUS	W.	98 35 52	3328	99 59 31	3335	101 23 02	3341	102 46 26	3348
	MARS	W.	54 04 55	3123	55 32 36	3130	57 00 09	3137	58 27 33	3143
	Spica	W.	45 16 34	2964	46 47 31	2970	48 18 21	2976	49 49 04	2982
	α Aquilæ	E.	56 03 38	3592	54 44 55	3623	53 26 46	3656	52 09 12	3692
	SATURN	E.	60 26 23	2953	58 55 11	2961	57 24 09	2968	55 53 16	2974
	JUPITER	E.	105 53 05	2968	104 22 12	2974	102 51 26	2980	101 20 48	2986
7	Regulus	W.	110 54 17	3011	112 24 16	3016	113 54 09	3021	115 23 56	3026
	VENUS	W.	109 41 41	3376	111 04 25	3380	112 27 04	3386	113 49 37	3390
	MARS	W.	65 42 42	3173	67 09 23	3179	68 35 57	3184	70 02 25	3189
	Spica	W.	57 20 55	3008	58 50 58	3013	60 20 55	3017	61 50 47	3021
	α Aquilæ	E.	45 51 37	3912	44 38 29	3966	43 26 16	4026	42 15 02	4092

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.	P. L. of Diff.	XV ^h	P. L. of Diff.	XVIII ^h	P. L. of Diff.	XXI ^h	P. L. of Diff.
			° ' "		° ' "		° ' "		° ' "	
1	SUN	W.	91 31 40	2898	93 04 02	2913	94 36 04	2930	96 07 45	2946
	VENUS	W.	46 16 41	2933	47 48 18	2947	49 19 37	2961	50 50 39	2975
	Regulus	W.	41 59 08	2579	43 38 32	2593	45 17 37	2606	46 56 24	2620
	Antares	E.	58 03 24	2629	56 25 09	2647	54 47 18	2665	53 09 51	2684
	α Aquilæ	E.	107 22 13	3008	105 52 10	3016	104 22 17	3024	102 52 34	3033
	SATURN	E.	117 29 17	2559	115 49 26	2573	114 09 54	2587	112 30 41	2601
2	SUN	W.	103 41 14	3022	105 10 59	3037	106 40 26	3051	108 09 35	3065
	VENUS	W.	58 21 25	3044	59 50 43	3057	61 19 45	3070	62 48 31	3083
	Regulus	W.	55 05 41	2687	56 42 39	2699	58 19 20	2712	59 55 44	2725
	MARS	W.	11 50 19	2826	13 24 13	2840	14 57 48	2854	16 31 06	2867
	Antares	E.	45 08 47	2778	43 33 50	2798	41 59 18	2818	40 25 13	2839
	α Aquilæ	E.	95 26 56	3086	93 58 29	3097	92 30 16	3110	91 02 18	3122
3	SATURN	E.	104 19 24	2670	102 42 04	2683	101 05 01	2695	99 28 15	2708
	SUN	W.	115 31 01	3134	116 58 29	3147	118 25 42	3160	119 52 39	3172
	VENUS	W.	70 08 29	3145	71 35 44	3156	73 02 46	3167	74 29 35	3178
	Regulus	W.	67 53 40	2784	69 28 29	2795	71 03 03	2806	72 37 23	2817
	MARS	W.	24 13 24	2931	25 45 03	2944	27 16 26	2956	28 47 34	2967
	Antares	E.	32 42 00	2961	31 10 58	2990	29 40 32	3022	28 10 46	3056
4	α Aquilæ	E.	83 46 23	3190	82 20 02	3204	80 53 58	3219	79 28 11	3235
	SATURN	E.	91 28 33	2768	89 53 24	2780	88 18 30	2791	86 43 50	2801
	SUN	W.	127 03 49	3231	128 29 21	3242	129 54 40	3253	131 19 46	3263
	VENUS	W.	81 40 23	3230	83 05 57	3240	84 31 19	3249	85 56 30	3258
	Regulus	W.	80 25 41	2867	81 58 42	2876	83 31 32	2885	85 04 10	2894
	MARS	W.	36 19 47	3020	37 49 34	3030	39 19 09	3040	40 48 32	3050
5	Spica	W.	26 54 15	2884	28 26 54	2891	29 59 25	2898	31 31 47	2905
	α Aquilæ	E.	72 24 00	3318	71 00 09	3336	69 36 39	3355	68 13 30	3374
	SATURN	E.	78 53 57	2852	77 20 37	2862	75 47 30	2871	74 14 34	2880
	VENUS	W.	92 59 54	3300	94 24 06	3307	95 48 10	3314	97 12 05	3321
	Regulus	W.	92 44 38	2935	94 16 13	2942	95 47 39	2950	97 18 55	2956
	MARS	W.	48 12 39	3093	49 40 57	3101	51 09 06	3109	52 37 05	3116
6	Spica	W.	39 11 25	2939	40 42 54	2946	42 14 15	2952	43 45 28	2958
	α Aquilæ	E.	61 23 37	3483	60 02 54	3508	58 42 39	3535	57 22 53	3563
	SATURN	E.	66 32 45	2923	65 00 55	2931	63 29 15	2938	61 57 44	2946
	JUPITER	E.	111 58 04	2940	110 26 36	2947	108 55 17	2954	107 24 07	2961
	Regulus	W.	104 53 11	2989	106 23 38	2994	107 53 58	3000	109 24 11	3005
	VENUS	W.	104 09 42	3354	105 32 51	3359	106 55 54	3365	108 18 51	3371
7	MARS	W.	59 54 50	3150	61 21 59	3157	62 49 00	3163	64 15 54	3168
	Spica	W.	51 19 40	2988	52 50 08	2993	54 20 30	2997	55 50 46	3003
	α Aquilæ	E.	50 52 16	3729	49 36 00	3769	48 20 26	3813	47 05 37	3860
	SATURN	E.	54 22 31	2981	52 51 55	2988	51 21 27	2994	49 51 07	3001
	JUPITER	E.	99 50 17	2992	98 19 54	2997	96 49 38	3002	95 19 28	3008
	Regulus	W.	116 53 36	3031	118 23 10	3035	119 52 39	3039	121 22 03	3043
7	VENUS	W.	115 12 05	3395	116 34 27	3399	117 56 45	3403	119 18 58	3407
	MARS	W.	71 28 48	3194	72 55 04	3198	74 21 15	3203	75 47 21	3207
	Spica	W.	63 20 34	3026	64 50 15	3030	66 19 51	3034	67 49 22	3037
	α Aquilæ	E.	41 04 53	4164	39 55 53	4244	38 48 08	4331	37 41 44	4427

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Noon.	P. L. of Diff.	IIIh	P. L. of Diff.	VIh	P. L. of Diff.	IXh	P. L. of Diff.
			° ' "		° ' "		° ' "		° ' "	
7	SATURN	E.	48 20 56	3008	46 50 53	3014	45 20 57	3020	43 51 09	3027
	JUPITER	E.	93 49 25	3013	92 19 28	3018	90 49 37	3022	89 19 51	3026
8	MARS	W.	77 13 22	3211	78 39 18	3215	80 05 09	3219	81 30 56	3223
	Spica	W.	69 18 49	3041	70 48 11	3044	72 17 29	3047	73 46 43	3051
	Antares	W.	24 57 10	3319	26 20 59	3296	27 45 15	3276	29 09 55	3258
	SATURN	E.	36 24 15	3061	34 55 17	3069	33 26 29	3076	31 57 50	3085
	JUPITER	E.	81 52 21	3046	80 23 05	3050	78 53 54	3053	77 24 47	3056
9	MARS	W.	88 38 51	3237	90 04 16	3240	91 29 38	3242	92 54 57	3244
	Spica	W.	81 11 59	3064	82 40 53	3066	84 09 44	3068	85 38 33	3070
	Antares	W.	36 17 33	3202	37 43 40	3194	39 09 56	3188	40 36 20	3183
	JUPITER	E.	70 00 04	3069	68 31 17	3070	67 02 31	3072	65 33 48	3075
10	MARS	W.	100 00 59	3253	101 26 06	3253	102 51 12	3254	104 16 17	3254
	Spica	W.	93 02 08	3076	94 30 46	3077	95 59 24	3078	97 28 01	3078
	Antares	W.	47 49 44	3163	49 16 38	3159	50 43 36	3156	52 10 38	3153
	JUPITER	E.	58 10 46	3082	56 42 14	3083	55 13 44	3083	53 45 14	3084
11	MARS	W.	111 21 35	3255	112 46 39	3255	114 11 43	3254	115 36 49	3253
	Spica	W.	104 51 00	3078	106 19 37	3078	107 48 14	3077	109 16 52	3075
	Antares	W.	59 26 37	3140	60 53 59	3137	62 21 23	3134	63 48 51	3131
	JUPITER	E.	46 22 51	3084	44 54 22	3084	43 25 53	3083	41 57 23	3083
	Aldebaran	E.	121 26 06	3073	119 57 23	3072	118 28 39	3070	116 59 53	3069
12	Antares	W.	71 07 05	3116	72 34 55	3112	74 02 50	3109	75 30 49	3105
	JUPITER	E.	34 34 39	3077	33 06 01	3076	31 37 22	3074	30 08 41	3073
	Aldebaran	E.	109 35 38	3060	108 06 39	3057	106 37 37	3054	105 08 31	3051
13	Antares	W.	82 52 01	3082	84 20 32	3078	85 49 09	3072	87 17 53	3067
	SATURN	W.	24 04 18	3103	25 32 24	3089	27 00 47	3075	28 29 27	3062
	Aldebaran	E.	97 41 57	3030	96 12 23	3026	94 42 43	3021	93 12 56	3015
14	Antares	W.	94 43 20	3035	96 12 49	3028	97 42 27	3021	99 12 14	3013
	SATURN	W.	35 56 31	3006	37 26 36	2995	38 56 55	2985	40 27 27	2974
	Aldebaran	E.	85 42 13	2983	84 11 40	2976	82 40 57	2969	81 10 05	2960
	SUN	E.	127 50 25	3367	126 27 31	3358	125 04 27	3349	123 41 12	3339
15	Antares	W.	106 43 37	2971	108 14 26	2962	109 45 26	2953	111 16 38	2943
	SATURN	W.	48 03 28	2920	49 35 22	2909	51 07 30	2896	52 39 54	2885
	Aldebaran	E.	73 33 03	2915	72 01 03	2905	70 28 51	2894	68 56 25	2884
	SUN	E.	116 42 05	3287	115 17 39	3276	113 52 59	3264	112 28 05	3252
16	SATURN	W.	60 25 45	2821	61 59 45	2808	63 34 03	2794	65 08 39	2779
	JUPITER	W.	14 12 52	2895	15 45 17	2871	17 18 13	2848	18 51 38	2827
	Aldebaran	E.	61 10 39	2824	59 36 43	2811	58 02 30	2798	56 28 00	2785
	SUN	E.	105 19 53	3186	103 53 27	3172	102 26 44	3157	100 59 44	3142
17	SATURN	W.	73 06 24	2705	74 42 57	2690	76 19 50	2674	77 57 05	2658
	JUPITER	W.	26 45 23	2731	28 21 22	2713	29 57 44	2695	31 34 31	2678
	Aldebaran	E.	48 30 54	2712	46 54 30	2697	45 17 46	2681	43 40 41	2666
	SUN	E.	93 40 02	3063	92 11 07	3046	90 41 51	3029	89 12 14	3012

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.	P. L. of Diff.	XVh	P. L. of Diff.	XVIIIh	P. L. of Diff.	XXIh	P. L. of Diff.
			° ' "		° ' "		° ' "		° ' "	
7	SATURN	E.	42 21 30	3034	40 51 59	3040	39 22 36	3047	37 53 21	3054
	JUPITER	E.	87 50 11	3030	86 20 36	3034	84 51 06	3039	83 21 41	3043
8	MARS	W.	82 56 38	3226	84 22 16	3229	85 47 51	3232	87 13 23	3235
	Spica	W.	75 15 53	3054	76 44 59	3056	78 14 02	3059	79 43 02	3061
	Antares	W.	30 34 56	3242	32 00 15	3230	33 25 49	3220	34 51 36	3210
	SATURN	E.	30 29 21	3094	29 01 04	3104	27 32 58	3114	26 05 05	3124
	JUPITER	E.	75 55 43	3059	74 26 43	3062	72 57 47	3065	71 28 54	3067
9	MARS	W.	94 20 14	3246	95 45 29	3248	97 10 40	3250	98 35 50	3251
	Spica	W.	87 07 20	3072	88 36 04	3073	90 04 47	3074	91 33 28	3075
	Antares	W.	42 02 50	3178	43 29 26	3173	44 56 07	3169	46 22 53	3165
	JUPITER	E.	64 05 08	3077	62 36 30	3078	61 07 54	3079	59 39 19	3081
10	MARS	W.	105 41 22	3255	107 06 26	3257	108 31 28	3256	109 56 31	3255
	Spica	W.	98 56 37	3078	100 25 13	3079	101 53 48	3078	103 22 24	3078
	Antares	W.	53 37 43	3150	55 04 52	3148	56 32 03	3145	57 59 18	3142
	JUPITER	E.	52 16 45	3084	50 48 16	3085	49 19 48	3085	47 51 20	3084
11	MARS	W.	117 01 56	3252	118 27 04	3250	119 52 14	3248	121 17 26	3247
	Spica	W.	110 45 32	3073	112 14 14	3072	113 42 57	3071	115 11 42	3069
	Antares	W.	65 16 23	3129	66 43 58	3126	68 11 36	3123	69 39 18	3119
	JUPITER	E.	40 28 53	3082	39 00 21	3082	37 31 49	3080	36 03 15	3078
	Aldebaran	E.	115 31 06	3068	114 02 17	3067	112 33 27	3065	111 04 34	3062
12	Antares	W.	76 58 53	3101	78 27 02	3096	79 55 16	3091	81 23 36	3087
	JUPITER	E.	28 39 58	3071	27 11 13	3070	25 42 27	3069	24 13 39	3067
	Aldebaran	E.	103 39 21	3047	102 10 07	3044	100 40 49	3040	99 11 26	3035
13	Antares	W.	88 46 43	3061	90 15 41	3055	91 44 46	3048	93 13 59	3042
	SATURN	W.	29 58 23	3050	31 27 34	3039	32 56 59	3027	34 26 38	3016
	Aldebaran	E.	91 43 02	3010	90 13 02	3004	88 42 54	2997	87 12 38	2990
14	Antares	W.	100 42 11	3005	102 12 17	2997	103 42 33	2989	105 13 00	2980
	SATURN	W.	41 58 12	2964	43 29 10	2953	45 00 22	2942	46 31 48	2931
	Aldebaran	E.	79 39 02	2952	78 07 49	2944	76 36 26	2935	75 04 51	2925
	SUN	E.	122 17 46	3329	120 54 09	3319	119 30 20	3309	118 06 19	3298
15	Antares	W.	112 48 02	2934	114 19 38	2924	115 51 27	2913	117 23 29	2903
	SATURN	W.	54 12 32	2873	55 45 25	2860	57 18 35	2847	58 52 02	2835
	Aldebaran	E.	67 23 46	2873	65 50 52	2861	64 17 43	2849	62 44 19	2837
	SUN	E.	111 02 57	3239	109 37 34	3226	108 11 56	3213	106 46 03	3199
16	SATURN	W.	66 43 34	2766	68 18 47	2751	69 54 20	2736	71 30 12	2721
	JUPITER	W.	20 25 31	2807	21 59 50	2787	23 34 36	2767	25 09 47	2749
	Aldebaran	E.	54 53 12	2771	53 18 06	2756	51 42 41	2742	50 06 57	2727
	SUN	E.	99 32 25	3127	98 04 48	3111	96 36 52	3095	95 08 37	3079
17	SATURN	W.	79 34 41	2641	81 12 40	2625	82 51 01	2608	84 29 45	2591
	JUPITER	W.	33 11 41	2660	34 49 15	2642	36 27 13	2624	38 05 36	2605
	Aldebaran	E.	42 03 15	2650	40 25 28	2633	38 47 18	2616	37 08 45	2600
	SUN	E.	87 42 16	2994	86 11 56	2977	84 41 14	2958	83 10 09	2941

GREENWICH MEAN TIME.										
LUNAR DISTANCES.										
Day of the Month.	Name and Direction of Object.	Noon.	P. L. of Diff.	IIIh	P. L. of Diff.	VIh	P. L. of Diff.	IXh	P. L. of Diff.	
18	SATURN W.	86 08 53	2574	87 48 24	2557	89 28 18	2540	91 08 36	2522	
	α Pegasi W.	45 28 51	3007	46 58 55	2969	48 29 47	2931	50 01 26	2895	
	JUPITER W.	39 44 24	2588	41 23 36	2569	43 03 13	2551	44 43 15	2533	
	Aldebaran E.	35 29 50	2583	33 50 32	2566	32 10 50	2548	30 30 44	2531	
	SUN E.	81 38 42	2922	80 06 51	2903	78 34 36	2885	77 01 58	2866	
19	SATURN W.	99 36 19	2433	101 19 07	2415	103 02 20	2398	104 45 58	2380	
	α Pegasi W.	57 50 41	2735	59 26 34	2707	61 03 04	2679	62 40 12	2653	
	JUPITER W.	53 09 52	2440	54 52 30	2422	56 35 34	2403	58 19 04	2384	
	Aldebaran E.	22 04 12	2445	20 21 42	2428	18 38 47	2411	16 55 28	2396	
	SUN E.	69 12 38	2771	67 37 32	2752	66 02 00	2733	64 26 04	2713	
20	SATURN W.	113 30 32	2293	115 16 42	2276	117 03 17	2259	118 50 17	2243	
	α Pegasi W.	70 54 29	2532	72 34 58	2510	74 15 58	2488	75 57 28	2467	
	JUPITER W.	67 03 13	2294	68 49 22	2277	70 35 56	2258	72 22 57	2241	
	SUN E.	56 20 02	2621	54 41 35	2603	53 02 44	2585	51 23 29	2568	
21	α Pegasi W.	84 31 52	2376	86 16 01	2360	88 00 33	2345	89 45 27	2331	
	JUPITER W.	81 24 18	2159	83 13 47	2144	85 03 39	2130	86 53 53	2115	
	SUN E.	43 01 29	2489	41 20 01	2475	39 38 13	2462	37 56 07	2450	
26	SUN W.	28 08 17	2419	29 51 24	2426	31 34 21	2435	33 17 06	2445	
	Spica E.	52 09 56	2079	50 18 24	2092	48 27 13	2106	46 36 23	2120	
	MARS E.	53 24 18	2234	51 36 41	2247	49 49 24	2262	48 02 28	2276	
	Antares E.	97 50 39	2121	96 00 12	2134	94 10 04	2146	92 20 15	2159	
27	SUN W.	41 46 52	2510	43 27 52	2525	45 08 31	2540	46 48 49	2556	
	Spica E.	37 27 55	2200	35 39 28	2218	33 51 27	2237	32 03 54	2256	
	MARS E.	39 13 19	2356	37 28 41	2373	35 44 28	2391	34 00 40	2410	
	Antares E.	83 16 29	2235	81 28 53	2251	79 41 42	2268	77 54 56	2285	
28	SUN W.	55 04 26	2645	56 42 20	2663	58 19 50	2682	59 56 55	2701	
	VENUS W.	11 07 32	2562	12 47 19	2579	14 26 43	2597	16 05 42	2615	
	Antares E.	69 07 39	2379	67 23 34	2398	65 39 57	2418	63 56 48	2438	
	α Aquilæ E.	117 15 47	2843	115 42 16	2847	114 08 49	2852	112 35 29	2859	
29	SUN W.	67 55 57	2797	69 30 29	2816	71 04 37	2835	72 38 20	2854	
	VENUS W.	24 14 29	2707	25 51 00	2725	27 27 07	2743	29 02 50	2761	
	Antares E.	55 28 18	2543	53 48 05	2565	52 08 22	2587	50 29 09	2610	
	α Aquilæ E.	104 51 08	2904	103 18 54	2916	101 46 55	2929	100 15 13	2942	
	SATURN E.	112 56 53	2460	111 14 43	2478	109 32 59	2495	107 51 39	2512	
30	SUN W.	80 20 48	2948	81 52 06	2966	83 23 01	2984	84 53 34	3002	
	VENUS W.	36 55 27	2851	38 28 49	2869	40 01 48	2885	41 34 26	2902	
	Antares E.	42 20 53	2729	40 44 51	2754	39 09 22	2780	37 34 28	2807	
	α Aquilæ E.	92 41 08	3018	91 11 18	3034	89 41 48	3051	88 12 38	3069	
	SATURN E.	99 31 02	2599	97 52 06	2616	96 13 33	2632	94 35 22	2649	
31	SUN W.	92 20 52	3087	93 49 17	3103	95 17 23	3119	96 45 10	3135	
	VENUS W.	49 12 20	2982	50 42 55	2997	52 13 11	3012	53 43 09	3026	
	α Aquilæ E.	80 52 18	3161	79 25 22	3180	77 58 49	3200	76 32 40	3220	
	SATURN E.	86 29 56	2728	84 53 53	2743	83 18 10	2757	81 42 46	2771	

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.	Midnight.	P. L. of Diff.	XVh	P. L. of Diff.	XVIIIh	P. L. of Diff.	XXIh	P. L. of Diff.
		° ' "		° ' "		° ' "		° ' "	
18	SATURN W.	92 49 19	2504	94 30 27	2487	96 11 59	2469	97 53 56	2450
	α Pegasi W.	51 33 51	2861	53 07 00	2828	54 40 52	2795	56 15 26	2764
	JUPITER W.	46 23 43	2515	48 04 36	2496	49 45 55	2477	51 27 40	2458
	Aldebaran W.	28 50 14	2514	27 09 20	2496	25 28 01	2480	23 46 19	2462
	SUN E.	75 28 55	2847	73 55 28	2828	72 21 36	2809	70 47 19	2790
19	SATURN W.	106 30 02	2362	108 14 31	2344	109 59 26	2327	111 44 46	2309
	α Pegasi W.	64 17 55	2627	65 56 13	2602	67 35 05	2577	69 14 31	2554
	JUPITER W.	60 03 01	2366	61 47 24	2348	63 32 14	2330	65 17 30	2311
	Aldebaran E.	15 11 46	2382	13 27 45	2368	11 43 24	2356	9 58 46	2344
	SUN E.	62 49 42	2694	61 12 54	2676	59 35 42	2657	57 58 04	2639
20	SATURN W.	120 37 40	2227	122 25 27	2212	124 13 37	2197	126 02 09	2182
	α Pegasi W.	77 39 27	2448	79 21 54	2429	81 04 47	2410	82 48 07	2393
	JUPITER W.	74 10 23	2224	75 58 15	2208	77 46 31	2191	79 35 12	2174
	SUN E.	49 43 50	2651	48 03 48	2535	46 23 23	2520	44 42 37	2504
21	α Pegasi W.	91 30 42	2317	93 16 16	2305	95 02 08	2294	96 48 17	2283
	JUPITER W.	88 44 29	2101	90 35 27	2087	92 26 46	2075	94 18 24	2064
	SUN E.	36 13 44	2439	34 31 05	2420	32 48 11	2420	31 05 04	2412
26	SUN W.	34 59 37	2456	36 41 52	2468	38 23 50	2481	40 05 31	2494
	Spica E.	44 45 55	2135	42 55 49	2151	41 06 07	2167	39 16 48	2183
	MARS E.	46 15 53	2291	44 29 40	2307	42 43 50	2323	40 58 22	2339
	Antares E.	90 30 46	2174	88 41 39	2188	86 52 53	2202	85 04 29	2218
27	SUN W.	48 28 44	2574	50 08 15	2591	51 47 23	2608	53 26 07	2626
	Spica E.	30 16 49	2276	28 30 14	2297	26 44 10	2318	24 58 37	2340
	MARS E.	32 17 19	2429	30 34 25	2448	28 51 58	2468	27 09 59	2488
	Antares E.	76 08 35	2304	74 22 41	2322	72 37 13	2340	70 52 12	2359
28	SUN W.	61 33 34	2720	63 09 48	2739	64 45 36	2758	66 20 59	2777
	VENUS W.	17 44 16	2633	19 22 26	2651	21 00 12	2669	22 37 33	2688
	Antares E.	62 14 07	2459	60 31 56	2480	58 50 14	2500	57 09 01	2522
	α Aquilæ E.	111 02 17	2866	109 29 14	2873	107 56 20	2882	106 23 37	2892
29	SUN W.	74 11 38	2873	75 44 32	2892	77 17 01	2911	78 49 06	2929
	VENUS W.	30 38 09	2780	32 13 03	2798	33 47 34	2815	35 21 42	2833
	Antares E.	48 50 27	2632	47 12 15	2656	45 34 36	2679	43 57 28	2704
	α Aquilæ E.	98 43 47	2956	97 12 39	2971	95 41 50	2985	94 11 19	3001
	SATURN E.	106 10 43	2530	104 30 12	2548	102 50 05	2565	101 10 22	2582
30	SUN W.	86 23 44	3019	87 53 33	3037	89 23 00	3054	90 52 06	3070
	VENUS W.	43 06 42	2919	44 38 37	2935	46 10 11	2951	47 41 25	2966
	Antares E.	36 00 09	2836	34 26 28	2866	32 53 26	2898	31 21 05	2932
	α Aquilæ E.	86 43 50	3087	85 15 24	3105	83 47 20	3123	82 19 38	3142
	SATURN E.	92 57 34	2666	91 20 08	2681	89 43 03	2697	88 06 19	2713
31	SUN W.	98 12 37	3150	99 39 46	3164	101 06 38	3178	102 33 13	3193
	VENUS W.	55 12 49	3041	56 42 11	3055	58 11 16	3067	59 40 06	3080
	α Aquilæ E.	75 06 54	3241	73 41 33	3262	72 16 37	3282	70 52 05	3303
	SATURN E.	80 07 40	2786	78 32 54	2800	76 58 26	2813	75 24 15	2826

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S					Sidereal Time of Semi-diameter Passing Meridian.	Equation of Time, to be Added to Apparent Time.	Diff. for 1 Hour.
		Apparent Right Ascension.	Diff. for 1 Hour.	Apparent Declination.	Diff. for 1 Hour.	Semi-diameter.			
		h m s	s	° ' "	"	' "	s	m s	s
Sat.	1	8 41 53.09	+9.733	N. 18 15 42.6	-37.06	15 47.40	66.69	6 11.57	0.123
SUN.	2	8 45 46.35	9.707	18 00 44.3	37.80	15 47.53	66.60	6 08.29	0.149
Mon.	3	8 49 38.99	9.681	17 45 28.4	38.52	15 47.67	66.52	6 04.38	0.175
Tues.	4	8 53 31.01	+9.655	17 29 55.1	-39.24	15 47.80	66.43	5 59.85	0.201
Wed.	5	8 57 22.42	9.630	17 14 04.8	39.95	15 47.94	66.34	5 54.73	0.226
Thur.	6	9 01 13.21	9.605	16 57 57.8	40.64	15 48.08	66.26	5 48.98	0.251
Frid.	7	9 05 03.40	+9.580	16 41 34.4	-41.32	15 48.23	66.17	5 42.63	0.276
Sat.	8	9 08 52.99	9.555	16 24 54.7	41.99	15 48.37	66.09	5 35.69	0.301
SUN.	9	9 12 42.00	9.531	16 07 59.2	42.64	15 48.52	66.00	5 28.16	0.325
Mon.	10	9 16 30.42	+9.506	15 50 48.1	-43.28	15 48.67	65.92	5 20.05	0.350
Tues.	11	9 20 18.26	9.482	15 33 21.7	43.92	15 48.83	65.83	5 11.36	0.373
Wed.	12	9 24 05.55	9.459	15 15 40.3	44.54	15 48.99	65.75	5 02.13	0.396
Thur.	13	9 27 52.29	+9.436	14 57 44.1	-45.14	15 49.15	65.67	4 52.33	0.419
Frid.	14	9 31 38.48	9.414	14 39 33.6	45.74	15 49.31	65.59	4 42.00	0.441
Sat.	15	9 35 24.14	9.392	14 21 09.1	46.32	15 49.47	65.51	4 31.14	0.463
SUN.	16	9 39 09.28	+9.370	14 02 30.7	-46.89	15 49.65	65.43	4 19.75	0.485
Mon.	17	9 42 53.90	9.349	13 43 38.8	47.44	15 49.82	65.36	4 07.86	0.506
Tues.	18	9 46 38.03	9.329	13 24 33.8	47.97	15 49.99	65.28	3 55.47	0.526
Wed.	19	9 50 21.67	+9.309	13 05 16.0	-48.50	15 50.17	65.21	3 42.58	0.546
Thur.	20	9 54 04.82	9.289	12 45 45.6	49.02	15 50.35	65.13	3 29.22	0.566
Frid.	21	9 57 47.50	9.269	12 26 03.1	49.52	15 50.54	65.06	3 15.39	0.586
Sat.	22	10 01 29.71	+9.250	12 06 08.7	-50.00	15 50.74	64.99	3 01.07	0.605
SUN.	23	10 05 11.46	9.231	11 46 02.9	50.48	15 50.94	64.93	2 46.31	0.624
Mon.	24	10 08 52.75	9.212	11 25 45.9	50.93	15 51.14	64.86	2 31.09	0.643
Tues.	25	10 12 33.60	+9.194	11 05 18.0	-51.38	15 51.35	64.80	2 15.43	0.661
Wed.	26	10 16 14.03	9.176	10 44 39.7	51.81	15 51.57	64.74	1 59.35	0.679
Thur.	27	10 19 54.02	9.159	10 23 51.2	52.23	15 51.79	64.68	1 42.84	0.696
Frid.	28	10 23 33.61	+9.142	10 02 52.9	-52.63	15 52.01	64.63	1 25.92	0.713
Sat.	29	10 27 12.80	9.126	9 41 45.1	53.02	15 52.23	64.57	1 08.59	0.729
SUN.	30	10 30 51.61	9.109	9 20 28.1	53.41	15 52.45	64.52	0 50.91	0.745
Mon.	31	10 34 30.05	9.094	8 59 02.3	53.76	15 52.68	64.47	0 32.85	0.760
Tues.	32	10 38 08.15	+9.080	N. 8 37 27.8	-54.10	15 52.91	64.42	0 14.46	0.774

NOTE.—The mean time of semidiameter passing the meridian may be found by subtracting 0.18° from the sidereal time. The sign — prefixed to the hourly change of declination indicates that north declinations are decreasing.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S				Equation of Time, to be Subtracted from Mean Time.	Diff. for 1 Hour.	Sidereal Time, or Right Ascension of Mean Sun.
		Apparent Right Ascension.	Diff. for 1 Hour.	Apparent Declination.	Diff. for 1 Hour.			
Sat.	1	h m s 8 41 52.08	+ 9.733	N. 18 15 46.4	- 37.06	m s 6 11.58	+ 0.123	h m s 8 35 40.50
SUN.	2	8 45 45.36	9.707	18 00 48.2	37.80	6 08.30	0.149	8 39 37.06
Mon.	3	8 49 38.01	9.681	17 45 32.2	38.52	6 04.40	0.175	8 43 33.61
Tues.	4	8 53 30.04	+ 9.655	17 29 59.0	- 39.24	5 59.87	+ 0.201	8 47 30.17
Wed.	5	8 57 21.47	9.630	17 14 08.8	39.95	5 54.75	0.226	8 51 26.72
Thur.	6	9 01 12.28	9.605	16 58 01.8	40.64	5 49.00	0.251	8 55 23.28
Frid.	7	9 05 02.49	+ 9.580	16 41 38.3	- 41.32	5 42.66	+ 0.276	8 59 19.83
Sat.	8	9 08 52.10	9.555	16 24 58.6	41.99	5 35.72	0.301	9 03 16.38
SUN.	9	9 12 41.13	9.531	16 08 03.1	42.64	5 28.19	0.325	9 07 12.94
Mon.	10	9 16 29.57	+ 9.506	15 50 51.9	- 43.28	5 20.08	+ 0.350	9 11 09.49
Tues.	11	9 20 17.44	9.483	15 33 25.5	43.92	5 11.39	0.373	9 15 06.05
Wed.	12	9 24 04.76	9.460	15 15 44.0	44.54	5 02.16	0.396	9 19 02.60
Thur.	13	9 27 51.52	+ 9.437	14 57 47.8	- 45.14	4 52.36	+ 0.419	9 22 59.16
Frid.	14	9 31 37.74	9.415	14 39 37.2	45.74	4 42.03	0.441	9 26 55.71
Sat.	15	9 35 23.43	9.393	14 21 12.6	46.32	4 31.17	0.463	9 30 52.26
SUN.	16	9 39 08.60	+ 9.371	14 02 34.0	- 46.89	4 19.78	+ 0.485	9 34 48.82
Mon.	17	9 42 53.26	9.350	13 43 42.1	47.44	4 07.89	0.506	9 38 45.37
Tues.	18	9 46 37.42	9.330	13 24 37.0	47.98	3 55.50	0.526	9 42 41.92
Wed.	19	9 50 21.09	+ 9.310	13 05 19.0	- 48.51	3 42.61	+ 0.546	9 46 38.48
Thur.	20	9 54 04.28	9.290	12 45 48.5	49.03	3 29.25	0.566	9 50 35.03
Frid.	21	9 57 47.00	9.270	12 26 05.8	49.53	3 15.42	0.586	9 54 31.58
Sat.	22	10 01 29.24	+ 9.251	12 06 11.3	- 50.01	3 01.10	+ 0.605	9 58 28.14
SUN.	23	10 05 11.03	9.232	11 46 05.2	50.49	2 46.34	0.624	10 02 24.69
Mon.	24	10 08 52.36	9.213	11 25 48.0	50.94	2 31.12	0.643	10 06 21.24
Tues.	25	10 12 33.26	+ 9.195	11 05 20.0	- 51.39	2 15.46	+ 0.661	10 10 17.80
Wed.	26	10 16 13.72	9.177	10 44 41.4	51.82	1 59.37	0.679	10 14 14.35
Thur.	27	10 19 53.76	9.160	10 23 52.7	52.24	1 42.86	0.696	10 18 10.90
Frid.	28	10 23 33.39	+ 9.143	10 02 54.2	- 52.64	1 25.94	+ 0.713	10 22 07.45
Sat.	29	10 27 12.62	9.127	9 41 46.1	53.03	1 08.61	0.729	10 26 04.01
SUN.	30	10 30 51.48	9.111	9 20 28.9	53.41	0 50.92	0.745	10 30 00.56
Mon.	31	10 34 29.97	9.096	8 59 02.8	53.77	0 32.86	0.760	10 33 57.11
Tues.	32	10 38 08.12	+ 9.082	N. 8 37 28.1	- 54.11	0 14.46	+ 0.774	10 37 53.66

NOTE.—The semidiameter for mean noon may be assumed the same as that for apparent noon.
The sign — prefixed to the hourly change of declination indicates that north declinations are decreasing.

Diff. for 1 Hour,
+9.8565.
(Table III.)

AT GREENWICH MEAN NOON.								
Day of the Month.	Day of the Year.	THE SUN'S				Logarithm of the Radius Vector of the Earth.	Diff. for 1 Hour.	Mean Time of Sidereal Noon.
		TRUE LONGITUDE.		Diff. for 1 Hour.	LATITUDE.			
		λ	λ'					
1	213	128 03 12.2	2 38.9	+143.51	+ 0.86	0.006 4230	- 24.2	15 21 48.07
2	214	129 00 36.7	0 03.2	143.53	0.94	0.006 3640	24.9	15 17 52.16
3	215	129 58 01.8	57 28.2	143.56	1.00	0.006 3035	25.5	15 13 56.25
4	216	130 55 27.6	54 53.9	+143.59	+ 1.04	0.006 2414	- 26.1	15 10 00.34
5	217	131 52 54.3	52 20.4	143.63	1.06	0.006 1780	26.7	15 06 04.43
6	218	132 50 21.8	49 47.8	143.66	1.05	0.006 1132	27.3	15 02 08.53
7	219	133 47 50.2	47 16.1	+143.71	+ 1.00	0.006 0471	- 27.8	14 58 12.62
8	220	134 45 19.7	44 45.4	143.75	0.94	0.005 9799	28.3	14 54 16.71
9	221	135 42 50.2	42 15.9	143.80	0.85	0.005 9114	28.8	14 50 20.80
10	222	136 40 21.9	39 47.4	+143.85	+ 0.74	0.005 8417	- 29.3	14 46 24.89
11	223	137 37 54.8	37 20.2	143.90	0.62	0.005 7708	29.8	14 42 28.98
12	224	138 35 29.1	34 54.4	143.96	0.49	0.005 6987	30.3	14 38 33.07
13	225	139 33 04.7	32 29.9	+144.02	+ 0.35	0.005 6253	- 30.9	14 34 37.17
14	226	140 30 41.7	30 06.8	144.08	0.22	0.005 5506	31.5	14 30 41.26
15	227	141 28 20.3	27 45.3	144.14	0.12	0.005 4745	32.0	14 26 45.35
16	228	142 26 00.5	25 25.4	+144.21	+ 0.02	0.005 3969	- 32.7	14 22 49.44
17	229	143 23 42.2	23 07.0	144.27	- 0.05	0.005 3177	33.4	14 18 53.54
18	230	144 21 25.6	20 50.2	144.34	0.08	0.005 2368	34.1	14 14 57.63
19	231	145 19 10.5	18 35.1	+144.41	- 0.09	0.005 1540	- 34.9	14 11 01.72
20	232	146 16 57.1	16 21.6	144.47	0.07	0.005 0692	35.7	14 07 05.81
21	233	147 14 45.2	14 09.6	144.54	- 0.02	0.004 9824	36.6	14 03 09.91
22	234	148 12 34.9	11 59.2	+144.60	+ 0.06	0.004 8935	- 37.5	13 59 14.00
23	235	149 10 26.1	9 50.2	144.66	0.18	0.004 8024	38.4	13 55 18.09
24	236	150 08 18.6	7 42.7	144.72	0.31	0.004 7093	39.2	13 51 22.18
25	237	151 06 12.6	5 36.5	+144.77	+ 0.44	0.004 6141	- 40.0	13 47 26.28
26	238	152 04 07.8	3 31.7	144.83	0.57	0.004 5171	40.8	13 43 30.37
27	239	153 02 04.4	1 28.1	144.88	0.71	0.004 4183	41.5	13 39 34.46
28	240	153 60 02.2	59 25.9	+144.94	+ 0.83	0.004 3178	- 42.2	13 35 38.56
29	241	154 58 01.3	57 24.9	144.99	0.92	0.004 2159	42.7	13 31 42.65
30	242	155 56 01.8	55 25.2	145.05	0.98	0.004 1128	43.2	13 27 46.74
31	243	156 54 03.6	53 27.0	145.10	1.02	0.004 0085	43.7	13 23 50.84
32	244	157 52 06.8	51 30.1	+145.16	+ 1.04	0.003 9032	- 44.1	13 19 54.93
NOTE.—The longitudes in the column λ are referred to the true equinox of their own date, while those in the column λ' are referred to the mean equinox of the beginning of the Besselian fictitious year.								Diff. for 1 Hour. — 9.8296". (Table II.)

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month.	SEMIDIAMETER.		HORIZONTAL PARALLAX.				UPPER TRANSIT.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 Hour.	Midnight.	Diff. for 1 Hour.	Meridian of Greenwich.	Diff. for 1 Hour.	
							h m	m	d
1	15 11.9	15 06.7	55 40.8	-1.68	55 21.7	-1.51	7 00.3	+2.01	8.0
2	15 02.0	14 57.9	55 04.6	1.33	54 49.6	1.16	7 48.6	2.01	9.0
3	14 54.4	14 51.4	54 36.7	0.99	54 25.7	0.83	8 36.8	2.00	10.0
4	14 49.0	14 47.0	54 16.8	-0.67	54 09.6	-0.52	9 24.7	+1.98	11.0
5	14 45.6	14 44.6	54 04.2	0.38	54 00.6	-0.24	10 12.0	1.95	12.0
6	14 44.0	14 43.8	53 58.5	-0.11	53 57.9	+0.01	10 58.6	1.92	13.0
7	14 44.0	14 44.7	53 58.7	+0.13	54 00.9	+0.24	11 44.1	+1.88	14.0
8	14 45.6	14 46.9	54 04.4	0.35	54 09.2	0.45	12 28.7	1.84	15.0
9	14 48.6	14 50.6	54 15.3	0.56	54 22.6	0.67	13 12.6	1.82	16.0
10	14 52.9	14 55.7	54 31.4	+0.77	54 41.2	+0.88	13 56.2	+1.82	17.0
11	14 58.7	15 02.2	54 52.5	1.00	55 05.1	1.11	14 40.0	1.84	18.0
12	15 06.0	15 10.2	55 19.2	1.23	55 34.7	1.35	15 24.6	1.89	19.0
13	15 14.8	15 19.9	55 51.6	+1.47	56 10.0	+1.59	16 10.7	+1.96	20.0
14	15 25.2	15 31.0	56 29.8	1.70	56 50.9	1.81	16 59.0	2.07	21.0
15	15 37.1	15 43.5	57 13.3	1.90	57 36.7	1.98	17 50.1	2.19	22.0
16	15 50.0	15 56.7	58 00.8	+2.03	58 25.4	+2.05	18 44.2	+2.32	23.0
17	16 03.5	16 10.1	58 50.1	2.04	59 14.4	1.98	19 41.3	2.43	24.0
18	16 16.5	16 22.4	59 37.8	1.89	59 59.7	1.73	20 40.7	2.50	25.0
19	16 27.8	16 32.5	60 19.4	+1.53	60 36.5	+1.28	21 41.1	+2.51	26.0
20	16 36.2	16 38.9	60 50.2	0.98	61 00.1	+0.65	22 41.1	2.47	27.0
21	16 40.5	16 40.8	61 05.8	+0.28	61 06.9	-0.10	23 39.6	2.40	28.0
22	16 39.8	16 37.5	61 03.3	-0.49	60 55.1	-0.86	0		29.0
23	16 34.1	16 29.5	60 42.5	1.22	60 25.8	1.54	0 36.1	+2.31	0.7
24	16 24.0	16 17.7	60 05.5	1.81	59 42.2	2.03	1 30.5	2.23	1.7
25	16 10.6	16 03.3	59 16.7	-2.20	58 49.5	-2.30	2 23.1	+2.16	2.7
26	15 55.6	15 47.9	58 21.4	2.35	57 52.9	2.35	3 14.4	2.11	3.7
27	15 40.2	15 32.8	57 24.8	2.31	56 57.5	2.23	4 04.7	2.08	4.7
28	15 25.7	15 19.0	56 31.4	-2.10	56 06.9	-1.96	4 54.4	+2.06	5.7
29	15 12.8	15 07.3	55 44.3	1.80	55 23.8	1.61	5 43.7	2.04	6.7
30	15 02.3	14 58.0	55 05.5	1.42	54 49.6	1.22	6 32.6	2.02	7.7
31	14 54.3	14 51.2	54 36.1	1.03	54 25.0	0.83	7 20.9	2.00	8.7
32	14 48.9	14 47.1	54 16.3	-0.63	54 09.8	-0.44	8 08.5	+1.97	9.7

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
SATURDAY 1.					MONDAY 3.				
0	15 22 18.54	+ 2.1138	S. 14 55 26.7	- 5.929	0	17 03 39.80	+ 2.1073	S. 18 05 23.7	- 1.920
1	15 24 25.36	2.1137	15 01 20.1	5.851	1	17 05 46.23	2.1070	18 07 16.3	1.833
2	15 26 32.18	2.1136	15 07 08.8	5.772	2	17 07 52.64	2.1067	18 09 03.7	1.747
3	15 28 38.99	2.1135	15 12 52.7	5.692	3	17 09 59.03	2.1063	18 10 45.9	1.660
4	15 30 45.80	2.1135	15 18 31.8	5.613	4	17 12 05.39	2.1058	18 12 22.9	1.573
5	15 32 52.61	2.1134	15 24 06.2	5.533	5	17 14 11.73	2.1054	18 13 54.7	1.487
6	15 34 59.41	2.1133	15 29 35.8	5.453	6	17 16 18.04	2.1050	18 15 21.3	1.400
7	15 37 06.20	2.1132	15 35 00.6	5.373	7	17 18 24.33	2.1046	18 16 42.7	1.313
8	15 39 12.99	2.1132	15 40 20.6	5.293	8	17 20 30.59	2.1041	18 17 58.9	1.227
9	15 41 19.78	2.1131	15 45 35.8	5.213	9	17 22 36.82	2.1036	18 19 09.9	1.140
10	15 43 26.56	2.1130	15 50 46.1	5.131	10	17 24 43.02	2.1031	18 20 15.7	1.053
11	15 45 33.34	2.1129	15 55 51.5	5.049	11	17 26 49.19	2.1026	18 21 16.3	0.967
12	15 47 40.11	2.1128	16 00 52.0	4.967	12	17 28 55.33	2.1021	18 22 11.7	0.880
13	15 49 46.88	2.1128	16 05 47.6	4.886	13	17 31 01.44	2.1016	18 23 01.9	0.793
14	15 51 53.65	2.1128	16 10 38.3	4.804	14	17 33 07.52	2.1010	18 23 46.9	0.707
15	15 54 00.41	2.1127	16 15 24.1	4.722	15	17 35 13.56	2.1004	18 24 26.7	0.621
16	15 56 07.17	2.1127	16 20 05.0	4.640	16	17 37 19.57	2.0998	18 25 01.4	0.534
17	15 58 13.93	2.1126	16 24 40.9	4.558	17	17 39 25.54	2.0992	18 25 30.8	0.448
18	16 00 20.68	2.1125	16 29 11.9	4.475	18	17 41 31.47	2.0985	18 25 55.1	0.362
19	16 02 27.43	2.1125	16 33 37.9	4.392	19	17 43 37.36	2.0979	18 26 14.2	0.275
20	16 04 34.18	2.1124	16 37 58.9	4.308	20	17 45 43.22	2.0973	18 26 28.1	0.188
21	16 06 40.92	2.1123	16 42 14.9	4.225	21	17 47 49.04	2.0966	18 26 36.8	0.102
22	16 08 47.66	2.1122	16 46 25.9	4.142	22	17 49 54.81	2.0958	18 26 40.4	- 0.017
23	16 10 54.39	+ 2.1121	S. 16 50 31.9	- 4.058	23	17 52 00.54	+ 2.0952	S. 18 26 38.8	+ 0.069
SUNDAY 2.					TUESDAY 4.				
0	16 13 01.11	+ 2.1120	S. 16 54 32.8	- 3.973	0	17 54 06.23	+ 2.0944	S. 18 26 32.1	+ 0.155
1	16 15 07.83	2.1120	16 58 28.7	3.890	1	17 56 11.87	2.0937	18 26 20.2	0.241
2	16 17 14.55	2.1119	17 02 19.6	3.806	2	17 58 17.47	2.0929	18 26 03.2	0.327
3	16 19 21.26	2.1118	17 06 05.4	3.721	3	18 00 23.02	2.0921	18 25 41.0	0.413
4	16 21 27.96	2.1117	17 09 46.1	3.636	4	18 02 28.52	2.0913	18 25 13.7	0.498
5	16 23 34.66	2.1116	17 13 21.7	3.552	5	18 04 33.98	2.0905	18 24 41.2	0.583
6	16 25 41.35	2.1114	17 16 52.3	3.467	6	18 06 39.38	2.0896	18 24 03.7	0.668
7	16 27 48.03	2.1112	17 20 17.7	3.382	7	18 08 44.73	2.0888	18 23 21.0	0.753
8	16 29 54.70	2.1111	17 23 38.1	3.297	8	18 10 50.03	2.0879	18 22 33.3	0.838
9	16 32 01.36	2.1110	17 26 53.3	3.211	9	18 12 55.28	2.0870	18 21 40.4	0.923
10	16 34 08.02	2.1108	17 30 03.4	3.126	10	18 15 00.47	2.0860	18 20 42.5	1.008
11	16 36 14.66	2.1106	17 33 08.4	3.040	11	18 17 05.60	2.0851	18 19 39.5	1.093
12	16 38 21.29	2.1104	17 36 08.2	2.954	12	18 19 10.68	2.0842	18 18 31.4	1.177
13	16 40 27.91	2.1103	17 39 02.9	2.869	13	18 21 15.70	2.0832	18 17 18.3	1.261
14	16 42 34.52	2.1101	17 41 52.5	2.783	14	18 23 20.66	2.0821	18 16 00.1	1.345
15	16 44 41.12	2.1098	17 44 36.9	2.697	15	18 25 25.55	2.0811	18 14 36.9	1.428
16	16 46 47.70	2.1096	17 47 16.1	2.611	16	18 27 30.39	2.0801	18 13 08.7	1.512
17	16 48 54.27	2.1093	17 49 50.2	2.525	17	18 29 35.16	2.0790	18 11 35.5	1.595
18	16 51 00.82	2.1091	17 52 19.1	2.438	18	18 31 39.87	2.0780	18 09 57.3	1.678
19	16 53 07.36	2.1088	17 54 42.8	2.352	19	18 33 44.52	2.0769	18 08 14.1	1.762
20	16 55 13.88	2.1086	17 57 01.4	2.266	20	18 35 49.10	2.0758	18 06 25.9	1.844
21	16 57 20.39	2.1083	17 59 14.7	2.179	21	18 37 53.61	2.0747	18 04 32.8	1.927
22	16 59 26.88	2.1080	18 01 22.9	2.093	22	18 39 58.06	2.0736	18 02 34.7	2.009
23	17 01 33.35	2.1077	18 03 25.9	2.007	23	18 42 02.44	2.0724	18 00 31.7	2.091
24	17 03 39.80	+ 2.1073	S. 18 05 23.7	- 1.920	24	18 44 06.75	+ 2.0713	S. 17 58 23.8	+ 2.173

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
WEDNESDAY 5.					FRIDAY 7.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
0	18 44 06.75	+ 2.0713	S. 17 58 23.8	+ 2.173	0	20 21 57.45	+ 2.0026	S. 14 45 23.5	+ 5.733
1	18 46 10.99	2.0701	17 56 11.0	2.255	1	20 23 57.56	2.0011	14 39 37.5	5.798
2	18 48 15.16	2.0688	17 53 53.2	2.337	2	20 25 57.58	1.9995	14 33 47.7	5.863
3	18 50 19.25	2.0676	17 51 30.6	2.417	3	20 27 57.50	1.9980	14 27 54.0	5.927
4	18 52 23.27	2.0664	17 49 03.2	2.498	4	20 29 57.34	1.9965	14 21 56.5	5.990
5	18 54 27.22	2.0652	17 46 30.8	2.579	5	20 31 57.08	1.9949	14 15 55.2	6.053
6	18 56 31.10	2.0639	17 43 53.7	2.658	6	20 33 56.73	1.9934	14 09 50.2	6.115
7	18 58 34.89	2.0626	17 41 11.8	2.738	7	20 35 56.29	1.9919	14 03 41.4	6.177
8	19 00 38.61	2.0614	17 38 25.1	2.818	8	20 37 55.76	1.9904	13 57 29.0	6.238
9	19 02 42.26	2.0602	17 35 33.6	2.898	9	20 39 55.14	1.9888	13 51 12.8	6.300
10	19 04 45.83	2.0588	17 32 37.3	2.978	10	20 41 54.42	1.9873	13 44 53.0	6.360
11	19 06 49.31	2.0574	17 29 36.3	3.057	11	20 43 53.62	1.9859	13 38 29.6	6.420
12	19 08 52.72	2.0562	17 26 30.5	3.136	12	20 45 52.73	1.9844	13 32 02.6	6.480
13	19 10 56.05	2.0548	17 23 20.0	3.214	13	20 47 51.75	1.9829	13 25 32.0	6.539
14	19 12 59.29	2.0534	17 20 04.8	3.292	14	20 49 50.68	1.9814	13 18 57.9	6.598
15	19 15 02.46	2.0521	17 16 45.0	3.369	15	20 51 49.52	1.9800	13 12 20.3	6.655
16	19 17 05.54	2.0507	17 13 20.5	3.447	16	20 53 48.28	1.9786	13 05 39.3	6.713
17	19 19 08.54	2.0492	17 09 51.3	3.524	17	20 55 46.95	1.9771	12 58 54.8	6.770
18	19 21 11.45	2.0478	17 06 17.6	3.601	18	20 57 45.53	1.9757	12 52 06.9	6.827
19	19 23 14.28	2.0465	17 02 39.2	3.678	19	20 59 44.03	1.9743	12 45 15.6	6.883
20	19 25 17.03	2.0451	16 58 56.3	3.753	20	21 01 42.45	1.9729	12 38 21.0	6.938
21	19 27 19.69	2.0436	16 55 08.8	3.830	21	21 03 40.78	1.9715	12 31 23.0	6.993
22	19 29 22.26	2.0421	16 51 16.7	3.905	22	21 05 39.03	1.9701	12 24 21.8	7.048
23	19 31 24.74	+ 2.0407	S. 16 47 20.2	+ 3.980	23	21 07 37.19	+ 1.9687	S. 12 17 17.3	+ 7.102
THURSDAY 6.					SATURDAY 8.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
0	19 33 27.14	+ 2.0393	S. 16 43 19.1	+ 4.056	0	21 09 35.28	+ 1.9674	S. 12 10 09.6	+ 7.155
1	19 35 29.45	2.0378	16 39 13.5	4.130	1	21 11 33.28	1.9661	12 02 58.7	7.208
2	19 37 31.67	2.0363	16 35 03.5	4.203	2	21 13 31.21	1.9648	11 55 44.6	7.262
3	19 39 33.80	2.0348	16 30 49.1	4.277	3	21 15 29.05	1.9634	11 48 27.3	7.314
4	19 41 35.84	2.0333	16 26 30.3	4.351	4	21 17 26.82	1.9622	11 41 06.9	7.365
5	19 43 37.79	2.0318	16 22 07.0	4.424	5	21 19 24.51	1.9608	11 33 43.5	7.416
6	19 45 39.65	2.0303	16 17 39.4	4.496	6	21 21 22.12	1.9596	11 26 17.0	7.467
7	19 47 41.43	2.0288	16 13 07.5	4.568	7	21 23 19.66	1.9584	11 18 47.5	7.516
8	19 49 43.11	2.0272	16 08 31.3	4.640	8	21 25 17.13	1.9572	11 11 15.1	7.565
9	19 51 44.69	2.0257	16 03 50.7	4.712	9	21 27 14.52	1.9559	11 03 39.7	7.615
10	19 53 46.19	2.0242	15 59 05.9	4.783	10	21 29 11.84	1.9547	10 56 01.3	7.663
11	19 55 47.60	2.0227	15 54 16.8	4.853	11	21 31 09.09	1.9536	10 48 20.1	7.711
12	19 57 48.91	2.0211	15 49 23.5	4.923	12	21 33 06.27	1.9524	10 40 36.0	7.759
13	19 59 50.13	2.0196	15 44 26.0	4.993	13	21 35 03.38	1.9513	10 32 49.0	7.806
14	20 01 51.26	2.0180	15 39 24.3	5.062	14	21 37 00.42	1.9501	10 24 59.3	7.852
15	20 03 52.29	2.0165	15 34 18.5	5.131	15	21 38 57.39	1.9490	10 17 06.8	7.898
16	20 05 53.24	2.0150	15 29 08.6	5.200	16	21 40 54.30	1.9479	10 09 11.5	7.943
17	20 07 54.09	2.0133	15 23 54.5	5.268	17	21 42 51.14	1.9468	10 01 13.6	7.988
18	20 09 54.84	2.0118	15 18 36.4	5.336	18	21 44 47.92	1.9458	9 53 13.0	8.032
19	20 11 55.51	2.0104	15 13 14.2	5.403	19	21 46 44.64	1.9448	9 45 09.8	8.076
20	20 13 56.09	2.0088	15 07 48.0	5.470	20	21 48 41.30	1.9438	9 37 03.9	8.119
21	20 15 56.57	2.0072	15 02 17.8	5.537	21	21 50 37.90	1.9428	9 28 55.5	8.161
22	20 17 56.95	2.0057	14 56 43.6	5.603	22	21 52 34.44	1.9419	9 20 44.6	8.203
23	20 19 57.25	2.0042	14 51 05.5	5.668	23	21 54 30.93	1.9410	9 12 31.2	8.244
24	20 21 57.45	+ 2.0026	S. 14 45 23.5	+ 5.733	24	21 56 27.36	+ 1.9401	S. 9 04 15.3	+ 8.285

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
SUNDAY 9.					TUESDAY 11.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
0	21 56 27.36	+ 1.9401	S. 9 04 15.3	+ 8.285	0	23 29 05.21	+ 1.9322	S. 1 50 17.1	+ 9.573
1	21 58 23.74	1.9392	8 55 57.0	8.325	1	23 31 01.16	1.9328	1 40 42.3	9.586
2	22 00 20.07	1.9383	8 47 36.3	8.365	2	23 32 57.15	1.9336	1 31 06.8	9.598
3	22 02 16.34	1.9375	8 39 13.2	8.405	3	23 34 53.19	1.9343	1 21 30.6	9.608
4	22 04 12.57	1.9368	8 30 47.7	8.443	4	23 36 49.27	1.9351	1 11 53.8	9.619
5	22 06 08.75	1.9360	8 22 20.0	8.481	5	23 38 45.40	1.9360	1 02 16.3	9.629
6	22 08 04.89	1.9353	8 13 50.0	8.518	6	23 40 41.59	1.9369	0 52 38.3	9.638
7	22 10 00.98	1.9345	8 05 17.8	8.555	7	23 42 37.83	1.9378	0 42 59.8	9.646
8	22 11 57.03	1.9338	7 56 43.4	8.592	8	23 44 34.13	1.9389	0 33 20.8	9.654
9	22 13 53.04	1.9332	7 48 06.8	8.628	9	23 46 30.50	1.9399	0 23 41.3	9.662
10	22 15 49.01	1.9325	7 39 28.1	8.663	10	23 48 26.92	1.9409	0 14 01.3	9.669
11	22 17 44.94	1.9318	7 30 47.3	8.698	11	23 50 23.41	1.9421	S. 0 04 21.0	9.674
12	22 19 40.83	1.9312	7 22 04.4	8.732	12	23 52 19.97	1.9433	N. 0 05 19.6	9.679
13	22 21 36.69	1.9307	7 13 19.5	8.765	13	23 54 16.60	1.9444	0 15 00.5	9.684
14	22 23 32.52	1.9303	7 04 32.6	8.798	14	23 56 13.30	1.9456	0 24 41.7	9.689
15	22 25 28.32	1.9298	6 55 43.7	8.831	15	23 58 10.07	1.9469	0 34 23.2	9.693
16	22 27 24.09	1.9293	6 46 52.9	8.863	16	0 00 06.93	1.9483	0 44 04.8	9.695
17	22 29 19.83	1.9288	6 38 00.2	8.894	17	0 02 03.86	1.9496	0 53 46.6	9.697
18	22 31 15.55	1.9284	6 29 05.6	8.925	18	0 04 00.88	1.9510	1 03 28.5	9.699
19	22 33 11.24	1.9280	6 20 09.2	8.955	19	0 05 57.98	1.9525	1 13 10.5	9.700
20	22 35 06.91	1.9277	6 11 11.0	8.984	20	0 07 55.18	1.9540	1 22 52.5	9.700
21	22 37 02.56	1.9274	6 02 11.1	9.013	21	0 09 52.46	1.9555	1 32 34.5	9.699
22	22 38 58.20	1.9272	5 53 09.4	9.042	22	0 11 49.84	1.9571	1 42 16.4	9.698
23	22 40 53.82	+ 1.9268	S. 5 44 06.1	+ 9.069	23	0 13 47.31	+ 1.9587	N. 1 51 58.3	+ 9.697
MONDAY 10.					WEDNESDAY 12.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
0	22 42 49.42	+ 1.9266	S. 5 35 01.1	+ 9.097	0	0 15 44.88	+ 1.9603	N. 2 01 40.0	+ 9.694
1	22 44 45.01	1.9265	5 25 54.5	9.123	1	0 17 42.55	1.9621	2 11 21.6	9.692
2	22 46 40.60	1.9263	5 16 46.3	9.150	2	0 19 40.33	1.9638	2 21 03.0	9.688
3	22 48 36.17	1.9262	5 07 36.5	9.175	3	0 21 38.21	1.9657	2 30 44.1	9.683
4	22 50 31.74	1.9262	4 58 25.3	9.200	4	0 23 36.21	1.9675	2 40 24.9	9.678
5	22 52 27.31	1.9261	4 49 12.5	9.224	5	0 25 34.31	1.9693	2 50 05.4	9.673
6	22 54 22.87	1.9261	4 39 58.4	9.248	6	0 27 32.53	1.9713	2 59 45.6	9.666
7	22 56 18.44	1.9262	4 30 42.8	9.272	7	0 29 30.87	1.9733	3 09 25.3	9.658
8	22 58 14.01	1.9262	4 21 25.8	9.294	8	0 31 29.32	1.9753	3 19 04.6	9.651
9	23 00 09.58	1.9262	4 12 07.5	9.316	9	0 33 27.90	1.9774	3 28 43.4	9.642
10	23 02 05.15	1.9263	4 02 47.9	9.337	10	0 35 26.61	1.9796	3 38 21.6	9.633
11	23 04 00.74	1.9266	3 53 27.1	9.358	11	0 37 25.45	1.9817	3 47 59.3	9.623
12	23 05 56.34	1.9268	3 44 05.0	9.378	12	0 39 24.41	1.9838	3 57 36.4	9.613
13	23 07 51.95	1.9270	3 34 41.7	9.398	13	0 41 23.51	1.9861	4 07 12.8	9.602
14	23 09 47.58	1.9273	3 25 17.3	9.417	14	0 43 22.74	1.9883	4 16 48.6	9.590
15	23 11 43.23	1.9276	3 15 51.7	9.435	15	0 45 22.11	1.9907	4 26 23.6	9.577
16	23 13 38.89	1.9279	3 06 25.1	9.453	16	0 47 21.62	1.9931	4 35 57.8	9.563
17	23 15 34.58	1.9283	2 56 57.4	9.471	17	0 49 21.28	1.9956	4 45 31.2	9.550
18	23 17 30.29	1.9288	2 47 28.6	9.488	18	0 51 21.09	1.9980	4 55 03.8	9.535
19	23 19 26.03	1.9293	2 37 58.9	9.503	19	0 53 21.04	2.0005	5 04 35.4	9.519
20	23 21 21.80	1.9298	2 28 28.3	9.518	20	0 55 21.15	2.0031	5 14 06.1	9.503
21	23 23 17.60	1.9303	2 18 56.8	9.533	21	0 57 21.41	2.0057	5 23 35.7	9.485
22	23 25 13.43	1.9308	2 09 24.4	9.548	22	0 59 21.83	2.0083	5 33 04.3	9.468
23	23 27 09.30	1.9315	1 59 51.1	9.561	23	1 01 22.41	2.0110	5 42 31.9	9.450
24	23 29 05.21	+ 1.9322	S. 1 50 17.1	+ 9.573	24	1 03 23.15	+ 2.0138	N. 5 51 58.3	+ 9.430

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
THURSDAY 13.					SATURDAY 15.				
0	1 03 23.15	+ 2.0138	N. 5 51 58.3	+ 9.430	0	2 44 00.38	+ 2.1935	N. 12 47 33.7	+ 7.563
1	1 05 24.06	2.0166	6 01 23.5	9.410	1	2 46 12.13	2.1982	12 55 05.7	7.503
2	1 07 25.14	2.0193	6 10 47.5	9.390	2	2 48 24.16	2.2028	13 02 34.1	7.442
3	1 09 26.38	2.0222	6 20 10.3	9.369	3	2 50 36.46	2.2073	13 09 58.7	7.379
4	1 11 27.80	2.0254	6 29 31.8	9.347	4	2 52 49.04	2.2121	13 17 19.6	7.317
5	1 13 29.40	2.0282	6 38 51.9	9.323	5	2 55 01.91	2.2168	13 24 36.7	7.253
6	1 15 31.18	2.0312	6 48 10.6	9.299	6	2 57 15.05	2.2214	13 31 49.9	7.188
7	1 17 33.14	2.0342	6 57 27.8	9.275	7	2 59 28.48	2.2262	13 38 59.2	7.122
8	1 19 35.28	2.0373	7 06 43.6	9.250	8	3 01 42.19	2.2308	13 46 04.5	7.054
9	1 21 37.61	2.0404	7 15 57.8	9.224	9	3 03 56.18	2.2356	13 53 05.7	6.986
10	1 23 40.13	2.0436	7 25 10.5	9.198	10	3 06 10.46	2.2404	14 00 02.8	6.918
11	1 25 42.84	2.0468	7 34 21.5	9.170	11	3 08 25.03	2.2452	14 06 55.8	6.848
12	1 27 45.74	2.0500	7 43 30.9	9.142	12	3 10 39.89	2.2501	14 13 44.6	6.777
13	1 29 48.84	2.0533	7 52 38.5	9.113	13	3 12 55.04	2.2548	14 20 29.1	6.705
14	1 31 52.14	2.0567	8 01 44.4	9.083	14	3 15 10.47	2.2597	14 27 09.2	6.633
15	1 33 55.64	2.0601	8 10 48.4	9.052	15	3 17 26.20	2.2646	14 33 45.0	6.559
16	1 35 59.35	2.0636	8 19 50.6	9.021	16	3 19 42.22	2.2694	14 40 16.3	6.484
17	1 38 03.27	2.0671	8 28 50.9	8.988	17	3 21 58.53	2.2743	14 46 43.1	6.409
18	1 40 07.40	2.0706	8 37 49.2	8.955	18	3 24 15.13	2.2791	14 53 05.4	6.332
19	1 42 11.74	2.0741	8 46 45.5	8.921	19	3 26 32.02	2.2840	14 59 23.0	6.254
20	1 44 16.29	2.0777	8 55 39.7	8.886	20	3 28 49.21	2.2889	15 05 35.9	6.176
21	1 46 21.06	2.0814	9 04 31.8	8.850	21	3 31 06.69	2.2938	15 11 44.1	6.097
22	1 48 26.06	2.0851	9 13 21.7	8.813	22	3 33 24.46	2.2987	15 17 47.5	6.017
23	1 50 31.27	+ 2.0888	N. 9 22 09.4	+ 8.777	23	3 35 42.53	+ 2.3036	N. 15 23 46.1	+ 5.935
FRIDAY 14.					SUNDAY 16.				
0	1 52 36.71	+ 2.0925	N. 9 30 54.9	+ 8.739	0	3 38 00.89	+ 2.3085	N. 15 29 39.7	+ 5.853
1	1 54 42.37	2.0963	9 39 38.1	8.700	1	3 40 19.55	2.3134	15 35 28.4	5.769
2	1 56 48.27	2.1002	9 48 18.9	8.660	2	3 42 38.50	2.3183	15 41 12.0	5.685
3	1 58 54.40	2.1041	9 56 57.3	8.619	3	3 44 57.74	2.3232	15 46 50.6	5.600
4	2 01 00.76	2.1079	10 05 33.2	8.578	4	3 47 17.28	2.3281	15 52 24.0	5.513
5	2 03 07.35	2.1119	10 14 06.6	8.536	5	3 49 37.11	2.3329	15 57 52.2	5.426
6	2 05 14.19	2.1160	10 22 37.5	8.493	6	3 51 57.23	2.3378	16 03 15.1	5.338
7	2 07 21.27	2.1200	10 31 05.7	8.448	7	3 54 17.65	2.3427	16 08 32.8	5.249
8	2 09 28.59	2.1240	10 39 31.3	8.403	8	3 56 38.35	2.3475	16 13 45.0	5.158
9	2 11 36.15	2.1282	10 47 54.1	8.357	9	3 58 59.35	2.3524	16 18 51.8	5.067
10	2 13 43.97	2.1323	10 56 14.1	8.310	10	4 01 20.64	2.3573	16 23 53.1	4.976
11	2 15 52.03	2.1364	11 04 31.3	8.263	11	4 03 42.22	2.3621	16 28 48.9	4.883
12	2 18 00.34	2.1406	11 12 45.7	8.215	12	4 06 04.09	2.3669	16 33 39.1	4.789
13	2 20 08.90	2.1448	11 20 57.1	8.165	13	4 08 26.25	2.3717	16 38 23.6	4.694
14	2 22 17.72	2.1492	11 29 05.5	8.115	14	4 10 48.69	2.3766	16 43 02.4	4.598
15	2 24 26.80	2.1535	11 37 10.9	8.064	15	4 13 11.42	2.3812	16 47 35.4	4.501
16	2 26 36.14	2.1578	11 45 13.2	8.013	16	4 15 34.44	2.3860	16 52 02.5	4.403
17	2 28 45.73	2.1621	11 53 12.4	7.959	17	4 17 57.74	2.3907	16 56 23.8	4.306
18	2 30 55.59	2.1666	12 01 08.3	7.905	18	4 20 21.32	2.3955	17 00 39.2	4.206
19	2 33 05.72	2.1710	12 09 01.0	7.851	19	4 22 45.18	2.4000	17 04 48.5	4.105
20	2 35 16.11	2.1754	12 16 50.4	7.795	20	4 25 09.32	2.4047	17 08 51.8	4.004
21	2 37 26.77	2.1799	12 24 36.4	7.738	21	4 27 33.74	2.4093	17 12 49.0	3.902
22	2 39 37.70	2.1845	12 32 19.0	7.681	22	4 29 58.43	2.4138	17 16 40.0	3.798
23	2 41 48.91	2.1890	12 39 58.1	7.623	23	4 32 23.39	2.4183	17 20 24.8	3.695
24	2 44 00.38	+ 2.1935	N. 12 47 33.7	+ 7.563	24	4 34 48.63	+ 2.4229	N. 17 24 03.4	+ 3.590

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
MONDAY 17.					WEDNESDAY 19.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
0	4 34 48.63	+ 2.4229	N.17 24 03.4	+ 3.590	0	6 35 18.97	+ 2.5723	N.18 02 00.4	- 2.207
1	4 37 14.14	2.4273	17 27 35.6	3.484	1	6 37 53.35	2.5736	17 59 44.1	2.337
2	4 39 39.91	2.4318	17 31 01.5	3.378	2	6 40 27.80	2.5747	17 57 20.0	2.466
3	4 42 05.95	2.4362	17 34 21.0	3.271	3	6 43 02.31	2.5758	17 54 48.2	2.595
4	4 44 32.25	2.4405	17 37 34.0	3.163	4	6 45 36.89	2.5768	17 52 08.6	2.725
5	4 46 58.81	2.4448	17 40 40.5	3.053	5	6 48 11.53	2.5777	17 49 21.2	2.853
6	4 49 25.62	2.4490	17 43 40.4	2.943	6	6 50 46.21	2.5784	17 46 26.2	2.982
7	4 51 52.69	2.4533	17 46 33.7	2.832	7	6 53 20.94	2.5792	17 43 23.4	3.111
8	4 54 20.02	2.4576	17 49 20.3	2.721	8	6 55 55.72	2.5799	17 40 12.9	3.239
9	4 56 47.60	2.4617	17 52 00.2	2.609	9	6 58 30.53	2.5804	17 36 54.7	3.368
10	4 59 15.42	2.4657	17 54 33.4	2.496	10	7 01 05.37	2.5809	17 33 28.8	3.496
11	5 01 43.48	2.4698	17 56 59.7	2.382	11	7 03 40.24	2.5813	17 29 55.2	3.623
12	5 04 11.79	2.4738	17 59 19.2	2.267	12	7 06 15.12	2.5815	17 26 14.0	3.751
13	5 06 40.34	2.4778	18 01 31.8	2.153	13	7 08 50.02	2.5817	17 22 25.1	3.878
14	5 09 09.12	2.4816	18 03 37.5	2.037	14	7 11 24.93	2.5818	17 18 28.6	4.005
15	5 11 38.13	2.4854	18 05 36.2	1.920	15	7 13 59.84	2.5818	17 14 24.5	4.131
16	5 14 07.37	2.4892	18 07 27.9	1.803	16	7 16 34.75	2.5817	17 10 12.9	4.257
17	5 16 36.83	2.4929	18 09 12.5	1.684	17	7 19 09.65	2.5816	17 05 53.7	4.383
18	5 19 06.52	2.4966	18 10 50.0	1.566	18	7 21 44.54	2.5814	17 01 26.9	4.509
19	5 21 36.42	2.5001	18 12 20.4	1.447	19	7 24 19.42	2.5811	16 56 52.6	4.633
20	5 24 06.53	2.5036	18 13 43.6	1.327	20	7 26 54.27	2.5807	16 52 10.9	4.757
21	5 26 36.85	2.5071	18 14 59.6	1.207	21	7 29 29.10	2.5803	16 47 21.8	4.881
22	5 29 07.38	2.5105	18 16 08.4	1.086	22	7 32 03.90	2.5797	16 42 25.2	5.004
23	5 31 38.11	+ 2.5138	N.18 17 09.9	+ 0.963	23	7 34 38.66	+ 2.5789	N.16 37 21.3	- 5.127
TUESDAY 18.					THURSDAY 20.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
0	5 34 09.04	+ 2.5171	N.18 18 04.0	+ 0.841	0	7 37 13.37	+ 2.5782	N.16 32 10.0	- 5.249
1	5 36 40.16	2.5203	18 18 50.8	0.718	1	7 39 48.04	2.5774	16 26 51.4	5.370
2	5 39 11.47	2.5234	18 19 30.2	0.595	2	7 42 22.66	2.5766	16 21 25.6	5.491
3	5 41 42.97	2.5265	18 20 02.2	0.472	3	7 44 57.23	2.5756	16 15 52.5	5.611
4	5 44 14.65	2.5295	18 20 26.8	0.347	4	7 47 31.73	2.5745	16 10 12.3	5.729
5	5 46 46.51	2.5323	18 20 43.8	0.222	5	7 50 06.17	2.5734	16 04 25.0	5.846
6	5 49 18.53	2.5351	18 20 53.4	+ 0.097	6	7 52 40.54	2.5722	15 58 30.5	5.967
7	5 51 50.72	2.5379	18 20 55.4	- 0.029	7	7 55 14.83	2.5709	15 52 29.0	6.083
8	5 54 23.08	2.5406	18 20 49.9	0.154	8	7 57 49.05	2.5696	15 46 20.6	6.199
9	5 56 55.59	2.5432	18 20 36.9	0.281	9	8 00 23.18	2.5682	15 40 05.1	6.315
10	5 59 28.26	2.5457	18 20 16.2	0.408	10	8 02 57.23	2.5667	15 33 42.8	6.429
11	6 02 01.07	2.5481	18 19 47.9	0.535	11	8 05 31.18	2.5651	15 27 13.6	6.543
12	6 04 34.03	2.5505	18 19 12.0	0.662	12	8 08 05.04	2.5635	15 20 37.7	6.655
13	6 07 07.13	2.5528	18 18 28.5	0.790	13	8 10 38.80	2.5618	15 13 55.0	6.767
14	6 09 40.36	2.5549	18 17 37.2	0.918	14	8 13 12.45	2.5599	15 07 05.6	6.878
15	6 12 13.72	2.5571	18 16 38.3	1.046	15	8 15 45.99	2.5582	15 00 09.7	6.988
16	6 14 47.21	2.5592	18 15 31.7	1.175	16	8 18 19.43	2.5563	14 53 07.1	7.097
17	6 17 20.82	2.5611	18 14 17.3	1.303	17	8 20 52.75	2.5543	14 45 58.1	7.204
18	6 19 54.54	2.5629	18 12 55.3	1.432	18	8 23 25.95	2.5523	14 38 42.6	7.311
19	6 22 28.37	2.5647	18 11 25.5	1.561	19	8 25 59.02	2.5502	14 31 20.8	7.417
20	6 25 02.30	2.5663	18 09 48.0	1.690	20	8 28 31.97	2.5481	14 23 52.6	7.522
21	6 27 36.33	2.5680	18 08 02.7	1.819	21	8 31 04.79	2.5458	14 16 18.2	7.626
22	6 30 10.46	2.5695	18 06 09.7	1.948	22	8 33 37.47	2.5436	14 08 37.5	7.728
23	6 32 44.67	2.5709	18 04 08.9	2.078	23	8 36 10.02	2.5413	14 00 50.8	7.829
24	6 35 18.97	+ 2.5723	N.18 02 00.4	- 2.207	24	8 38 42.43	+ 2.5389	N.13 52 58.0	- 7.929

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
FRIDAY 21.					SUNDAY 23.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
0	8 38 42.43	+ 2.5389	N. 13 52 58.0	- 7.929	0	10 37 10.77	+ 2.3903	N. 6 02 17.2	- 11.128
1	8 41 14.69	2.5365	13 44 59.3	8.028	1	10 39 34.09	2.3870	5 51 08.6	11.158
2	8 43 46.81	2.5341	13 36 54.6	8.127	2	10 41 57.21	2.3838	5 39 58.2	11.187
3	8 46 18.78	2.5315	13 28 44.1	8.223	3	10 44 20.14	2.3805	5 28 46.2	11.213
4	8 48 50.59	2.5289	13 20 27.9	8.318	4	10 46 42.87	2.3773	5 17 32.6	11.239
5	8 51 22.25	2.5264	13 12 06.0	8.412	5	10 49 05.41	2.3740	5 06 17.5	11.264
6	8 53 53.76	2.5238	13 03 38.5	8.504	6	10 51 27.75	2.3708	4 55 00.9	11.288
7	8 56 25.10	2.5210	12 55 05.5	8.596	7	10 53 49.90	2.3676	4 43 43.0	11.309
8	8 58 56.28	2.5182	12 46 27.0	8.687	8	10 56 11.86	2.3644	4 32 23.8	11.329
9	9 01 27.29	2.5154	12 37 43.1	8.776	9	10 58 33.63	2.3612	4 21 03.5	11.348
10	9 03 58.13	2.5127	12 28 53.9	8.863	10	11 00 55.20	2.3579	4 09 42.1	11.364
11	9 06 28.81	2.5098	12 19 59.5	8.950	11	11 03 16.58	2.3548	3 58 19.8	11.379
12	9 08 59.31	2.5069	12 10 59.9	9.035	12	11 05 37.78	2.3518	3 46 56.6	11.393
13	9 11 29.64	2.5040	12 01 55.3	9.118	13	11 07 58.79	2.3486	3 35 32.6	11.406
14	9 13 59.79	2.5010	11 52 45.7	9.201	14	11 10 19.61	2.3455	3 24 07.9	11.418
15	9 16 29.76	2.4980	11 43 31.2	9.282	15	11 12 40.25	2.3424	3 12 42.5	11.428
16	9 18 59.55	2.4950	11 34 11.9	9.361	16	11 15 00.70	2.3393	3 01 16.6	11.436
17	9 21 29.16	2.4920	11 24 47.9	9.438	17	11 17 20.97	2.3363	2 49 50.2	11.443
18	9 23 58.59	2.4889	11 15 19.3	9.515	18	11 19 41.06	2.3333	2 38 23.4	11.448
19	9 26 27.83	2.4858	11 05 46.1	9.591	19	11 22 00.97	2.3304	2 26 56.4	11.453
20	9 28 56.88	2.4827	10 56 08.4	9.665	20	11 24 20.71	2.3274	2 15 29.1	11.456
21	9 31 25.75	2.4795	10 46 26.3	9.738	21	11 26 40.26	2.3244	2 04 01.7	11.457
22	9 33 54.42	2.4763	10 36 39.9	9.808	22	11 28 59.64	2.3216	1 52 34.3	11.458
23	9 36 22.91	+ 2.4732	N. 10 26 49.3	- 9.878	23	11 31 18.85	+ 2.3187	N. 1 41 06.8	- 11.457
SATURDAY 22.					MONDAY 24.				
0	9 38 51.20	+ 2.4699	N. 10 16 54.6	- 9.945	0	11 33 37.88	+ 2.3158	N. 1 29 39.5	- 11.453
1	9 41 19.30	2.4667	10 06 55.9	10.012	1	11 35 56.74	2.3129	1 18 12.4	11.450
2	9 43 47.20	2.4634	9 56 53.2	10.078	2	11 38 15.43	2.3102	1 06 45.5	11.445
3	9 46 14.91	2.4602	9 46 46.6	10.141	3	11 40 33.96	2.3074	0 55 19.0	11.438
4	9 48 42.42	2.4569	9 36 36.3	10.203	4	11 42 52.32	2.3046	0 43 53.0	11.429
5	9 51 09.74	2.4537	9 26 22.3	10.263	5	11 45 10.51	2.3018	0 32 27.5	11.421
6	9 53 36.86	2.4503	9 16 04.7	10.323	6	11 47 28.54	2.2991	0 21 02.5	11.411
7	9 56 03.77	2.4469	9 05 43.6	10.380	7	11 49 46.40	2.2964	0 09 38.2	11.399
8	9 58 30.49	2.4437	8 55 19.1	10.436	8	11 52 04.11	2.2938	0 01 45.4	11.386
9	10 00 57.01	2.4403	8 44 51.3	10.491	9	11 54 21.66	2.2912	0 13 08.1	11.372
10	10 03 23.33	2.4370	8 34 20.2	10.544	10	11 56 39.05	2.2885	0 24 30.0	11.357
11	10 05 49.45	2.4337	8 23 46.0	10.596	11	11 58 56.28	2.2859	0 35 50.9	11.339
12	10 08 15.37	2.4303	8 13 08.7	10.646	12	12 01 13.36	2.2834	0 47 10.7	11.321
13	10 10 41.09	2.4270	8 02 28.5	10.694	13	12 03 30.29	2.2809	0 58 29.4	11.303
14	10 13 06.61	2.4237	7 51 45.4	10.741	14	12 05 47.07	2.2783	1 09 47.0	11.283
15	10 15 31.93	2.4203	7 40 59.6	10.786	15	12 08 03.69	2.2758	1 21 03.3	11.260
16	10 17 57.05	2.4169	7 30 11.1	10.830	16	12 10 20.17	2.2735	1 32 18.2	11.238
17	10 20 21.96	2.4136	7 19 20.0	10.873	17	12 12 36.51	2.2712	1 43 31.8	11.214
18	10 22 46.68	2.4102	7 08 26.4	10.913	18	12 14 52.71	2.2688	1 54 43.9	11.188
19	10 25 11.19	2.4068	6 57 30.4	10.953	19	12 17 08.76	2.2663	2 05 54.4	11.163
20	10 27 35.50	2.4036	6 46 32.0	10.992	20	12 19 24.67	2.2641	2 17 03.4	11.136
21	10 29 59.62	2.4003	6 35 31.4	11.028	21	12 21 40.45	2.2618	2 28 10.7	11.108
22	10 32 23.54	2.3969	6 24 28.7	11.063	22	12 23 56.09	2.2595	2 39 16.3	11.078
23	10 34 47.25	2.3936	6 13 23.9	11.096	23	12 26 11.59	2.2573	2 50 20.1	11.048
24	10 37 10.77	+ 2.3903	N. 6 02 17.2	- 11.128	24	12 28 26.96	+ 2.2551	S. 3 01 22.0	- 11.016

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
TUESDAY 25.					THURSDAY 27.				
0	12 28 26.96	+ 2.2551	S. 3 01 22.0	- 11.016	0	14 14 41.10	+ 2.1810	S. 10 56 02.3	- 8.460
1	12 30 42.20	2.2529	3 12 22.0	10.983	1	14 16 51.93	2.1800	11 04 27.8	8.389
2	12 32 57.31	2.2508	3 23 20.0	10.949	2	14 19 02.70	2.1791	11 12 49.0	8.318
3	12 35 12.29	2.2487	3 34 15.9	10.914	3	14 21 13.42	2.1782	11 21 06.0	8.248
4	12 37 27.15	2.2466	3 45 09.7	10.878	4	14 23 24.08	2.1772	11 29 18.8	8.176
5	12 39 41.88	2.2445	3 56 01.3	10.842	5	14 25 34.68	2.1763	11 37 27.1	8.103
6	12 41 56.49	2.2425	4 06 50.7	10.804	6	14 27 45.23	2.1753	11 45 31.1	8.030
7	12 44 10.98	2.2405	4 17 37.8	10.765	7	14 29 55.72	2.1744	11 53 30.7	7.957
8	12 46 25.35	2.2385	4 28 22.5	10.725	8	14 32 06.16	2.1736	12 01 25.9	7.883
9	12 48 39.60	2.2366	4 39 04.8	10.685	9	14 34 16.55	2.1727	12 09 16.7	7.809
10	12 50 53.74	2.2347	4 49 44.7	10.643	10	14 36 26.88	2.1718	12 17 03.0	7.735
11	12 53 07.77	2.2328	5 00 22.0	10.600	11	14 38 37.17	2.1710	12 24 44.9	7.660
12	12 55 21.68	2.2309	5 10 56.7	10.557	12	14 40 47.40	2.1702	12 32 22.2	7.584
13	12 57 35.48	2.2291	5 21 28.8	10.513	13	14 42 57.59	2.1694	12 39 55.0	7.508
14	12 59 49.17	2.2273	5 31 58.2	10.467	14	14 45 07.72	2.1685	12 47 23.2	7.432
15	13 02 02.76	2.2256	5 42 24.8	10.420	15	14 47 17.81	2.1677	12 54 46.8	7.355
16	13 04 16.24	2.2238	5 52 48.6	10.373	16	14 49 27.85	2.1670	13 02 05.8	7.278
17	13 06 29.61	2.2221	6 03 09.5	10.324	17	14 51 37.85	2.1662	13 09 20.1	7.200
18	13 08 42.89	2.2204	6 13 27.5	10.276	18	14 53 47.80	2.1654	13 16 29.8	7.123
19	13 10 56.06	2.2188	6 23 42.6	10.226	19	14 55 57.70	2.1647	13 23 34.8	7.044
20	13 13 09.14	2.2172	6 33 54.6	10.175	20	14 58 07.56	2.1640	13 30 35.1	6.966
21	13 15 22.12	2.2155	6 44 03.6	10.123	21	15 00 17.38	2.1633	13 37 30.7	6.887
22	13 17 35.00	2.2139	6 54 09.4	10.071	22	15 02 27.15	2.1625	13 44 21.5	6.807
23	13 19 47.79	+ 2.2123	S. 7 04 12.1	- 10.018	23	15 04 36.88	+ 2.1618	S. 13 51 07.5	- 6.727
WEDNESDAY 26.					FRIDAY 28.				
0	13 22 00.48	+ 2.2108	S. 7 14 11.6	- 9.964	0	15 06 46.56	+ 2.1611	S. 13 57 48.7	- 6.647
1	13 24 13.08	2.2093	7 24 07.8	9.909	1	15 08 56.21	2.1604	14 04 25.1	6.567
2	13 26 25.60	2.2079	7 34 00.7	9.853	2	15 11 05.81	2.1597	14 10 56.7	6.486
3	13 28 38.03	2.2064	7 43 50.2	9.798	3	15 13 15.37	2.1590	14 17 23.4	6.405
4	13 30 50.37	2.2049	7 53 36.4	9.741	4	15 15 24.89	2.1583	14 23 45.3	6.324
5	13 33 02.62	2.2035	8 03 19.1	9.683	5	15 17 34.37	2.1577	14 30 02.3	6.243
6	13 35 14.79	2.2022	8 12 58.4	9.625	6	15 19 43.81	2.1570	14 36 14.4	6.160
7	13 37 26.88	2.2008	8 22 34.1	9.565	7	15 21 53.21	2.1563	14 42 21.5	6.078
8	13 39 38.89	2.1995	8 32 06.2	9.505	8	15 24 02.56	2.1556	14 48 23.7	5.996
9	13 41 50.82	2.1982	8 41 34.7	9.445	9	15 26 11.88	2.1550	14 54 21.0	5.913
10	13 44 02.67	2.1968	8 50 59.6	9.384	10	15 28 21.16	2.1543	15 00 13.3	5.830
11	13 46 14.44	2.1956	9 00 20.8	9.322	11	15 30 30.40	2.1537	15 06 00.6	5.747
12	13 48 26.14	2.1944	9 09 38.2	9.259	12	15 32 39.60	2.1530	15 11 42.9	5.663
13	13 50 37.77	2.1932	9 18 51.9	9.196	13	15 34 48.76	2.1524	15 17 20.2	5.580
14	13 52 49.32	2.1919	9 28 01.7	9.132	14	15 36 57.89	2.1518	15 22 52.5	5.496
15	13 55 00.80	2.1907	9 37 07.7	9.068	15	15 39 06.97	2.1511	15 28 19.7	5.412
16	13 57 12.21	2.1896	9 46 09.8	9.003	16	15 41 16.02	2.1505	15 33 41.9	5.328
17	13 59 23.55	2.1884	9 55 08.0	8.938	17	15 43 25.03	2.1498	15 38 59.0	5.243
18	14 01 34.82	2.1873	10 04 02.3	8.871	18	15 45 34.00	2.1492	15 44 11.0	5.158
19	14 03 46.03	2.1863	10 12 52.5	8.803	19	15 47 42.93	2.1485	15 49 18.0	5.073
20	14 05 57.17	2.1852	10 21 38.7	8.736	20	15 49 51.82	2.1479	15 54 19.8	4.988
21	14 08 08.25	2.1841	10 30 20.8	8.668	21	15 52 00.68	2.1473	15 59 16.6	4.903
22	14 10 19.26	2.1830	10 38 58.8	8.598	22	15 54 09.49	2.1466	16 04 08.2	4.818
23	14 12 30.21	2.1820	10 47 32.6	8.529	23	15 56 18.27	2.1460	16 08 54.7	4.732
24	14 14 41.10	+ 2.1810	S. 10 56 02.3	- 8.460	24	15 58 27.01	+ 2.1453	S. 16 13 36.0	- 4.646

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
SATURDAY 29.					MONDAY 31.				
	h m s	s	° ' "	"		h m s	s	° ' "	"
0	15 58 27.01	+ 2.1453	S. 16 13 36.0	- 4.646	0	17 40 34.88	+ 2.1070	S. 18 16 07.9	- 0.453
1	16 00 35.71	2.1447	16 18 12.2	4.560	1	17 42 41.27	2.1059	18 16 32.5	0.367
2	16 02 44.37	2.1441	16 22 43.2	4.474	2	17 44 47.59	2.1048	18 16 51.9	0.281
3	16 04 53.00	2.1434	16 27 09.1	4.388	3	17 46 53.85	2.1038	18 17 06.2	0.195
4	16 07 01.58	2.1428	16 31 29.7	4.301	4	17 49 00.05	2.1028	18 17 15.3	0.108
5	16 09 10.13	2.1421	16 35 45.2	4.215	5	17 51 06.19	2.1018	18 17 19.2	- 0.022
6	16 11 18.63	2.1414	16 39 55.5	4.128	6	17 53 12.26	2.1006	18 17 17.9	+ 0.064
7	16 13 27.10	2.1408	16 44 00.6	4.042	7	17 55 18.26	2.0995	18 17 11.5	0.150
8	16 15 35.52	2.1401	16 48 00.5	3.954	8	17 57 24.20	2.0984	18 16 59.9	0.236
9	16 17 43.91	2.1394	16 51 55.1	3.867	9	17 59 30.07	2.0973	18 16 43.2	0.321
10	16 19 52.25	2.1388	16 55 44.5	3.780	10	18 01 35.87	2.0962	18 16 21.4	0.407
11	16 22 00.56	2.1381	16 59 28.7	3.692	11	18 03 41.61	2.0951	18 15 54.4	0.493
12	16 24 08.82	2.1373	17 03 07.7	3.606	12	18 05 47.28	2.0939	18 15 22.3	0.578
13	16 26 17.04	2.1367	17 06 41.4	3.518	13	18 07 52.88	2.0927	18 14 45.1	0.663
14	16 28 25.22	2.1359	17 10 09.9	3.432	14	18 09 58.40	2.0915	18 14 02.8	0.747
15	16 30 33.35	2.1352	17 13 33.2	3.344	15	18 12 03.86	2.0903	18 13 15.5	0.831
16	16 32 41.44	2.1345	17 16 51.2	3.256	16	18 14 09.24	2.0891	18 12 23.1	0.916
17	16 34 49.49	2.1338	17 20 03.9	3.168	17	18 16 14.55	2.0879	18 11 25.6	1.000
18	16 36 57.50	2.1331	17 23 11.4	3.081	18	18 18 19.79	2.0868	18 10 23.1	1.084
19	16 39 05.46	2.1323	17 26 13.6	2.993	19	18 20 24.96	2.0855	18 09 15.5	1.168
20	16 41 13.38	2.1316	17 29 10.5	2.905	20	18 22 30.05	2.0843	18 08 02.9	1.252
21	16 43 21.25	2.1308	17 32 02.2	2.818	21	18 24 35.07	2.0830	18 06 45.3	1.335
22	16 45 29.08	2.1301	17 34 48.6	2.730	22	18 26 40.01	2.0818	18 05 22.7	1.418
23	16 47 36.86	+ 2.1293	S. 17 37 29.8	- 2.642	23	18 28 44.88	+ 2.0805	S. 18 03 55.1	+ 1.501
SUNDAY 30.					TUESDAY, SEPTEMBER 1.				
0	16 49 44.60	+ 2.1286	S. 17 40 05.7	- 2.554	0	18 30 49.67	+ 2.0792	S. 18 02 22.6	+ 1.583
1	16 51 52.29	2.1278	17 42 36.3	2.466	PHASES OF THE MOON.				
2	16 53 59.93	2.1269	17 45 01.6	2.378					
3	16 56 07.52	2.1262	17 47 21.7	2.291					
4	16 58 15.07	2.1254	17 49 36.5	2.203					
5	17 00 22.57	2.1245	17 51 46.0	2.115	<div><div></div><div>Full Moon Aug. 7 20 54.2</div><div><div></div><div>Last Quarter 15 17 22.4</div><div><div></div><div>New Moon 22 07 50.9</div><div><div></div><div>First Quarter 29 08 34.4</div></div></div></div></div>				
6	17 02 30.01	2.1237	17 53 50.3	2.027					
7	17 04 37.41	2.1229	17 55 49.3	1.939					
8	17 06 44.76	2.1220	17 57 43.0	1.851					
9	17 08 52.05	2.1211	17 59 31.4	1.763	<div><div></div><div>Apogee Aug. 6 10.8</div><div><div></div><div>Perigee 21 08.9</div></div></div>				
10	17 10 59.29	2.1203	18 01 14.6	1.676					
11	17 13 06.48	2.1194	18 02 52.5	1.588					
12	17 15 13.62	2.1185	18 04 25.2	1.501					
13	17 17 20.70	2.1176	18 05 52.6	1.413					
14	17 19 27.73	2.1167	18 07 14.7	1.325					
15	17 21 34.70	2.1158	18 08 31.6	1.238					
16	17 23 41.62	2.1148	18 09 43.2	1.150					
17	17 25 48.48	2.1139	18 10 49.6	1.063					
18	17 27 55.29	2.1129	18 11 50.7	0.975					
19	17 30 02.03	2.1119	18 12 46.6	0.888					
20	17 32 08.72	2.1110	18 13 37.3	0.802					
21	17 34 15.35	2.1100	18 14 22.8	0.714					
22	17 36 21.92	2.1090	18 15 03.0	0.628					
23	17 38 28.43	2.1080	18 15 38.1	0.541					
24	17 40 34.88	+ 2.1070	S. 18 16 07.9	- 0.453					

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.	Noon.	P. L. of Diff.	IIIh	P. L. of Diff.	VIh	P. L. of Diff.	IXh	P. L. of Diff.
		° ' "		° ' "		° ' "		° ' "	
1	SUN W.	103 59 31	3207	105 25 32	3221	106 51 16	3233	108 16 46	3246
	VENUS W.	61 08 40	3093	62 36 58	3105	64 05 01	3117	65 32 50	3128
	Spica W.	30 04 11	2871	31 37 07	2882	33 09 49	2892	34 42 18	2902
	MARS W.	25 23 15	3063	26 52 10	3075	28 20 50	3086	29 49 17	3097
	α Aquilæ E.	69 27 57	3326	68 04 16	3350	66 41 02	3373	65 18 15	3398
	SATURN E.	73 50 21	2838	72 16 43	2852	70 43 23	2864	69 10 18	2876
	JUPITER E.	120 43 23	2832	119 09 37	2844	117 36 06	2855	116 02 50	2866
2	SUN W.	115 20 43	3303	116 44 51	3314	118 08 46	3324	119 32 30	3334
	VENUS W.	72 48 38	3179	74 15 12	3189	75 41 34	3198	77 07 46	3205
	Spica W.	42 21 40	2948	43 52 58	2957	45 24 05	2965	46 55 02	2973
	MARS W.	37 08 14	3148	38 35 25	3158	40 02 24	3168	41 29 12	3176
	α Aquilæ E.	58 31 30	3352	57 11 41	3363	55 52 26	3395	54 33 46	3367
	SATURN E.	61 28 31	2931	59 56 51	2940	58 25 23	2950	56 54 08	2959
	JUPITER E.	108 19 56	2917	106 47 59	2927	105 16 14	2935	103 44 39	2943
3	VENUS W.	84 16 28	3242	85 41 48	3248	87 07 00	3253	88 32 06	3259
	Spica W.	54 27 23	3009	55 57 25	3014	57 27 20	3020	58 57 08	3026
	MARS W.	48 40 43	3215	50 06 34	3222	51 32 17	3228	52 57 53	3235
	α Aquilæ E.	48 10 03	3828	46 55 30	3876	45 41 46	3928	44 28 55	3985
	SATURN E.	49 20 42	3003	47 50 33	3010	46 20 33	3019	44 50 44	3026
	JUPITER E.	96 09 16	2981	94 38 39	2986	93 08 09	2993	91 37 47	2998
4	VENUS W.	95 36 09	3281	97 00 43	3284	98 25 13	3287	99 49 40	3290
	Spica W.	66 24 30	3049	67 53 42	3053	69 22 49	3056	70 51 52	3060
	MARS W.	60 04 09	3260	61 29 07	3265	62 54 00	3268	64 18 49	3272
	Antares W.	22 18 15	3412	23 40 18	3378	25 03 00	3348	26 26 16	3321
	SATURN E.	37 23 58	3065	35 55 05	3072	34 26 21	3079	32 57 46	3088
	α Aquilæ E.	38 40 17	4355	37 34 15	4453	36 29 41	4560	35 26 42	4682
	JUPITER E.	84 07 34	3022	82 37 48	3026	81 08 07	3029	79 38 30	3033
	α Arietis E.	125 49 07	3191	124 22 47	3191	122 56 27	3190	121 30 06	3189
5	VENUS W.	106 51 11	3300	108 15 23	3300	109 39 34	3301	111 03 44	3308
	Spica W.	78 16 13	3072	79 44 57	3074	81 13 38	3075	82 42 18	3077
	MARS W.	71 21 52	3286	72 46 20	3288	74 10 45	3290	75 35 08	3291
	Antares W.	33 28 56	3238	34 54 20	3227	36 19 57	3218	37 45 45	3209
	JUPITER E.	72 11 23	3045	70 42 06	3047	69 12 51	3048	67 43 38	3050
	α Arietis E.	114 18 08	3186	112 51 42	3184	111 25 14	3184	109 58 46	3183
6	Spica W.	90 05 19	3080	91 33 53	3079	93 02 28	3079	94 31 03	3078
	MARS W.	82 36 44	3295	84 01 01	3296	85 25 17	3295	86 49 34	3295
	Antares W.	44 56 57	3178	46 23 32	3173	47 50 14	3168	49 17 02	3163
	JUPITER E.	60 17 53	3053	58 48 46	3053	57 19 39	3052	55 50 31	3052
	α Arietis E.	102 46 07	3178	101 19 32	3177	99 52 55	3176	98 26 17	3175
7	Spica W.	101 54 09	3073	103 22 51	3073	104 51 33	3071	106 20 18	3069
	MARS W.	93 51 07	3290	95 15 30	3288	96 39 53	3288	98 04 19	3286
	Antares W.	56 32 18	3143	57 59 36	3138	59 26 59	3134	60 54 27	3131
	JUPITER E.	48 24 44	3049	46 55 32	3047	45 26 18	3046	43 57 02	3044
	α Arietis E.	91 12 45	3168	89 45 57	3167	88 19 08	3165	86 52 17	3163
	Aldebaran E.	124 23 23	3068	122 54 34	3066	121 25 43	3065	119 56 50	3062

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.	Midnight.	P. L. of Diff.	XY ^h	P. L. of Diff.	XVIII ^h	P. L. of Diff.	XXI ^h	P. L. of Diff.
1	SUN W.	109 42 01	3258	111 07 02	3270	112 31 49	3281	113 56 23	3293
	VENUS W.	67 00 26	3139	68 27 48	3151	69 54 56	3160	71 21 53	3170
	Spica W.	36 14 34	2912	37 46 38	2921	39 18 30	2930	40 50 11	2939
	MARS W.	31 17 30	3108	32 45 30	3119	34 13 17	3129	35 40 52	3139
	α Aquilæ E.	63 55 56	3422	62 34 04	3448	61 12 42	3475	59 51 50	3504
	SATURN E.	67 37 28	2887	66 04 52	2899	64 32 32	2909	63 00 25	2920
	JUPITER E.	114 29 48	2877	112 57 00.	2888	111 24 26	2898	109 52 05	2908
2	SUN W.	120 56 02	3343	122 19 24	3353	123 42 34	3361	125 05 35	3369
	VENUS W.	78 33 49	3214	79 59 42	3222	81 25 25	3229	82 51 00	3235
	Spica W.	48 25 49	2981	49 56 26	2989	51 26 53	2995	52 57 12	3001
	MARS W.	42 55 50	3185	44 22 17	3193	45 48 35	3201	47 14 43	3208
	α Aquilæ E.	53 15 41	3663	51 58 14	3701	50 41 28	3740	49 25 23	3783
	SATURN E.	55 23 04	2969	53 52 12	2977	52 21 31	2986	50 51 01	2995
	JUPITER E.	102 13 15	2951	100 42 01	2959	99 10 57	2966	97 40 02	2973
3	VENUS W.	89 57 06	3265	91 21 59	3269	92 46 47	3273	94 11 30	3276
	Spica W.	60 26 49	3031	61 56 23	3036	63 25 51	3041	64 55 13	3045
	MARS W.	54 23 21	3241	55 48 42	3246	57 13 57	3251	58 39 06	3256
	α Aquilæ E.	43 17 01	4046	42 06 07	4114	40 56 19	4187	39 47 41	4266
	SATURN E.	43 21 04	3034	41 51 33	3042	40 22 12	3049	38 53 00	3057
	JUPITER E.	90 07 32	3003	88 37 23	3009	87 07 21	3014	85 37 25	3018
4	VENUS W.	101 14 03	3292	102 38 24	3295	104 02 41	3296	105 26 57	3298
	Spica W.	72 20 51	3063	73 49 46	3065	75 18 38	3068	76 47 27	3070
	MARS W.	65 43 33	3276	67 08 13	3279	68 32 49	3282	69 57 22	3284
	Antares W.	27 50 03	3298	29 14 17	3299	30 38 53	3264	32 03 47	3251
	SATURN E.	31 29 22	3097	30 01 09	3106	28 33 07	3117	27 05 18	3126
	α Aquilæ E.	34 25 27	4816	33 26 04	4966	32 28 42	5137	31 33 33	5332
	JUPITER E.	78 08 58	3035	76 39 29	3039	75 10 04	3041	73 40 42	3043
	α Arietis E.	120 03 44	3188	118 37 21	3188	117 10 58	3188	115 44 34	3187
5	VENUS W.	112 27 53	3302	113 52 02	3302	115 16 11	3302	116 40 20	3301
	Spica W.	84 10 56	3078	85 39 33	3078	87 08 09	3079	88 36 44	3079
	MARS W.	76 59 30	3293	78 23 50	3294	79 48 09	3294	81 12 27	3295
	Antares W.	39 11 43	3203	40 37 49	3195	42 04 04	3188	43 30 27	3183
	JUPITER E.	66 14 27	3051	64 45 17	3052	63 16 09	3052	61 47 01	3052
	α Arietis E.	108 32 16	3183	107 05 46	3181	105 39 14	3180	104 12 41	3179
6	Spica W.	95 59 39	3078	97 28 15	3078	98 56 51	3077	100 25 29	3075
	MARS W.	88 13 51	3294	89 38 09	3294	91 02 27	3294	92 26 46	3292
	Antares W.	50 43 55	3159	52 10 53	3155	53 37 56	3150	55 05 05	3147
	JUPITER E.	54 21 23	3052	52 52 15	3052	51 23 06	3051	49 53 56	3049
	α Arietis E.	96 59 38	3173	95 32 57	3173	94 06 15	3171	92 39 31	3169
7	Spica W.	107 49 06	3068	109 17 55	3065	110 46 47	3063	112 15 42	3060
	MARS W.	99 28 47	3284	100 53 17	3282	102 17 49	3280	103 42 24	3277
	Antares W.	62 21 59	3127	63 49 36	3123	65 17 18	3119	66 45 05	3115
	JUPITER E.	42 27 44	3043	40 58 24	3043	39 29 04	3040	37 59 41	3038
	α Arietis E.	85 25 24	3162	83 58 29	3160	82 31 32	3158	81 04 33	3157
	Aldebaran E.	118 27 54	3060	116 58 56	3058	115 29 55	3056	114 00 51	3052

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.	Noon.	P. L. of Diff.	IIIh	P. L. of Diff.	VIh	P. L. of Diff.	IXh	P. L. of Diff.
		° ' "		° ' "		° ' "		° ' "	
8	MARS W.	105 07 02	3275	106 31 43	3272	107 56 27	3269	109 21 15	3265
	Antares W.	68 12 56	3111	69 40 52	3107	71 08 53	3103	72 36 59	3098
	JUPITER E.	36 30 15	3037	35 00 48	3034	33 31 18	3032	32 01 46	3030
	α Arietis E.	79 37 32	3155	78 10 29	3153	76 43 24	3152	75 16 17	3150
	Aldebaran E.	112 31 43	3050	111 02 32	3047	109 33 18	3044	108 04 00	3041
9	Antares W.	79 58 49	3077	81 27 27	3073	82 56 10	3068	84 25 00	3063
	SATURN W.	23 09 47	3105	24 37 51	3089	26 06 14	3075	27 34 54	3063
	α Arietis E.	68 00 11	3142	66 32 52	3141	65 05 32	3139	63 38 10	3138
	Aldebaran E.	100 36 26	3022	99 06 41	3018	97 36 51	3014	96 06 55	3009
10	Antares W.	91 50 36	3038	93 20 02	3032	94 49 35	3026	96 19 15	3021
	SATURN W.	35 01 46	3010	36 31 46	3001	38 01 57	2992	39 32 20	2983
	α Arietis E.	56 21 02	3134	54 53 34	3136	53 26 08	3136	51 58 42	3137
	Aldebaran E.	88 35 49	2985	87 05 17	2979	85 34 37	2973	84 03 50	2967
11	Antares W.	103 49 19	2992	105 19 42	2985	106 50 13	2979	108 20 52	2973
	SATURN W.	47 06 55	2941	48 38 22	2933	50 09 59	2924	51 41 48	2916
	α Arietis E.	44 42 04	3152	43 14 57	3157	41 47 56	3165	40 21 05	3173
	Aldebaran E.	76 28 01	2935	74 56 26	2927	73 24 42	2920	71 52 49	2913
12	SATURN W.	59 23 38	2871	60 56 34	2861	62 29 43	2851	64 03 05	2841
	Aldebaran E.	64 10 55	2873	62 38 01	2864	61 04 55	2855	59 31 38	2845
	SUN E.	134 10 02	3242	132 44 42	3231	131 19 10	3220	129 53 25	3210
13	SATURN W.	71 53 07	2790	73 27 48	2779	75 02 44	2767	76 37 55	2756
	α Pegasi W.	31 34 04	3677	32 51 15	3596	34 09 54	3520	35 29 56	3453
	Aldebaran E.	51 42 04	2795	50 07 30	2785	48 32 42	2774	46 57 39	2763
	SUN E.	122 41 24	3153	121 14 18	3141	119 46 58	3128	118 19 22	3115
14	SATURN W.	84 37 39	2696	86 14 24	2684	87 51 26	2670	89 28 46	2657
	α Pegasi W.	42 27 04	3193	43 53 21	3153	45 20 26	3114	46 48 18	3079
	Aldebaran E.	38 58 39	2703	37 22 03	2690	35 45 10	2677	34 08 00	2664
	SUN E.	110 57 29	3049	109 28 17	3035	107 58 48	3021	106 29 01	3006
15	SATURN W.	97 39 53	2590	99 19 02	2575	100 58 31	2561	102 38 19	2547
	α Pegasi W.	54 17 54	2925	55 49 41	2898	57 22 03	2871	58 54 59	2846
	Aldebaran E.	25 57 43	2597	24 18 44	2584	22 39 27	2569	20 59 50	2555
	SUN E.	98 55 32	2931	97 23 53	2916	95 51 55	2900	94 19 36	2884
16	SATURN W.	111 02 21	2474	112 44 11	2459	114 26 22	2444	116 08 54	2430
	α Pegasi W.	66 47 29	2731	68 23 28	2709	69 59 56	2688	71 36 52	2667
	SUN E.	86 32 52	2802	84 58 27	2786	83 23 41	2769	81 48 33	2752
17	α Pegasi W.	79 48 13	2573	81 27 45	2555	83 07 42	2538	84 48 03	2522
	α Arietis W.	36 14 34	2645	37 52 28	2607	39 31 14	2572	41 10 48	2540
	SUN E.	73 47 17	2669	72 09 55	2652	70 32 11	2635	68 54 04	2619
18	α Pegasi W.	93 15 17	2446	94 57 46	2433	96 40 33	2421	98 23 38	2410
	α Arietis W.	49 39 02	2404	51 22 31	2381	53 06 33	2359	54 51 07	2338
	Aldebaran W.	15 20 33	2237	17 08 06	2220	18 56 03	2205	20 44 23	2191
	SUN E.	60 37 59	2540	58 57 41	2525	57 17 03	2510	55 36 04	2495

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.	P. L. of Diff.	XV ^h	P. L. of Diff.	XVIII ^h	P. L. of Diff.	XXI ^h	P. L. of Diff.
			° ' "		° ' "		° ' "		° ' "	
8	MARS	W.	110 46 07	3263	112 11 02	3260	113 36 01	3256	115 01 04	3262
	Antares	W.	74 05 11	3094	75 33 28	3090	77 01 49	3086	78 30 16	3081
	JUPITER	E.	30 32 11	3029	29 02 34	3027	27 32 55	3026	26 03 14	3025
	α Arietis	E.	73 49 07	3148	72 21 55	3147	70 54 43	3145	69 27 28	3143
	Aldebaran	E.	106 34 38	3038	105 05 12	3034	103 35 41	3030	102 06 06	3026
9	Antares	W.	85 53 55	3058	87 22 56	3053	88 52 03	3048	90 21 16	3043
	SATURN	W.	29 03 49	3051	30 32 59	3040	32 02 22	3030	33 31 58	3020
	α Arietis	E.	62 10 46	3137	60 43 21	3136	59 15 55	3136	57 48 29	3135
	Aldebaran	E.	94 36 54	3005	93 06 47	3000	91 36 34	2995	90 06 15	2989
10	Antares	W.	97 49 01	3015	99 18 55	3010	100 48 55	3004	102 19 03	2997
	SATURN	W.	41 02 54	2975	42 33 38	2966	44 04 33	2958	45 35 39	2950
	α Arietis	E.	50 31 17	3138	49 03 53	3141	47 36 33	3144	46 09 16	3148
	Aldebaran	E.	82 32 56	2961	81 01 54	2955	79 30 45	2948	77 59 27	2942
11	Antares	W.	109 51 39	2966	111 22 34	2960	112 53 37	2953	114 24 49	2946
	SATURN	W.	53 13 47	2907	54 45 57	2898	56 18 19	2889	57 50 53	2880
	α Arietis	E.	38 54 24	3183	37 27 54	3195	36 01 39	3210	34 35 42	3229
	Aldebaran	E.	70 20 46	2905	68 48 34	2898	67 16 12	2889	65 43 39	2880
12	SATURN	W.	65 36 39	2831	67 10 26	2821	68 44 26	2811	70 18 40	2801
	Aldebaran	E.	57 58 08	2835	56 24 26	2826	54 50 32	2816	53 16 25	2805
	SUN	E.	128 27 28	3199	127 01 18	3188	125 34 54	3176	124 08 16	3164
13	SATURN	W.	78 13 21	2744	79 49 02	2733	81 24 58	2721	83 01 10	2708
	α Pegasi	W.	36 51 13	3391	38 13 40	3336	39 37 10	3285	41 01 39	3237
	Aldebaran	E.	45 22 22	2751	43 46 50	2739	42 11 02	2728	40 34 59	2715
	SUN	E.	116 51 31	3103	115 23 25	3090	113 55 03	3076	112 26 24	3063
14	SATURN	W.	91 06 23	2644	92 44 18	2631	94 22 31	2617	96 01 03	2604
	α Pegasi	W.	48 16 53	3046	49 46 09	3013	51 16 06	2981	52 46 42	2953
	Aldebaran	E.	32 30 32	2652	30 52 47	2638	29 14 44	2625	27 36 23	2611
	SUN	E.	104 58 56	2992	103 28 33	2977	101 57 52	2962	100 26 52	2946
15	SATURN	W.	104 18 27	2533	105 58 55	2518	107 39 43	2503	109 20 52	2489
	α Pegasi	W.	60 28 27	2821	62 02 27	2798	63 36 57	2775	65 11 58	2752
	Aldebaran	E.	19 19 53	2542	17 39 38	2528	15 59 04	2515	14 18 11	2501
	SUN	E.	92 46 57	2868	91 13 57	2852	89 40 37	2835	88 06 55	2819
16	SATURN	W.	117 51 46	2415	119 34 59	2400	121 18 34	2385	123 02 30	2371
	α Pegasi	W.	73 14 16	2648	74 52 06	2628	76 30 23	2609	78 09 06	2591
	SUN	E.	80 13 02	2735	78 37 09	2719	77 00 54	2702	75 24 17	2685
17	α Pegasi	W.	86 28 46	2505	88 09 52	2490	89 51 19	2475	91 33 08	2460
	α Arietis	W.	42 51 06	2510	44 32 06	2481	46 13 47	2453	47 56 06	2427
	SUN	E.	67 15 35	2603	65 36 44	2587	63 57 31	2571	62 17 56	2555
18	α Pegasi	W.	100 06 59	2398	101 50 36	2388	103 34 28	2379	105 18 33	2371
	α Arietis	W.	56 36 12	2318	58 21 45	2300	60 07 44	2282	61 54 10	2265
	Aldebaran	W.	22 33 04	2177	24 22 06	2163	26 11 29	2150	28 01 12	2137
	SUN	E.	53 54 44	2482	52 13 05	2468	50 31 07	2455	48 48 51	2442

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.	Noon.	P. L. of Diff.	IIIh	P. L. of Diff.	VIh	P. L. of Diff.	IXh	P. L. of Diff.
		° ' "		° ' "		° ' "		° ' "	
19	α Arietis W.	63 41 02	2249	65 28 16	2234	67 15 53	2219	69 03 52	2206
	Aldebaran W.	29 51 15	2125	31 41 36	2113	33 32 16	2102	35 23 13	2091
	SUN E.	47 06 16	2430	45 23 24	2419	43 40 15	2408	41 56 51	2397
20	α Arietis W.	78 08 26	2151	79 58 08	2142	81 48 03	2135	83 38 10	2128
	Aldebaran W.	44 41 49	2045	46 34 13	2037	48 26 49	2031	50 19 35	2025
	SUN E.	33 16 29	2357	31 31 52	2352	29 47 08	2348	28 02 17	2345
24	SUN W.	23 15 19	2495	24 56 39	2507	26 37 43	2519	28 18 30	2531
	Antares E.	75 00 42	2217	73 12 40	2233	71 25 01	2249	69 37 46	2266
	α Aquilæ E.	122 25 09	2747	120 49 31	2740	119 13 44	2734	117 37 49	2732
25	SUN W.	36 37 37	2608	38 16 21	2626	39 54 41	2643	41 32 38	2661
	Antares E.	60 48 00	2358	59 03 25	2378	57 19 19	2399	55 35 42	2420
	α Aquilæ E.	109 38 17	2748	108 02 41	2756	106 27 15	2765	104 52 01	2775
	SATURN E.	116 26 04	2288	114 39 47	2304	112 53 54	2322	111 08 26	2339
26	SUN W.	49 36 07	2756	51 11 32	2775	52 46 32	2795	54 21 07	2815
	Antares E.	47 05 29	2535	45 25 05	2561	43 45 16	2587	42 06 03	2613
	α Aquilæ E.	96 59 48	2844	95 26 17	2861	93 53 08	2877	92 20 20	2894
	SATURN E.	102 27 29	2429	100 44 36	2447	99 02 08	2465	97 20 06	2484
27	SUN W.	62 07 36	2913	63 39 38	2932	65 11 16	2951	66 42 30	2970
	α Aquilæ E.	84 42 10	2993	83 11 48	3013	81 41 51	3034	80 12 21	3056
	SATURN E.	88 56 25	2576	87 16 57	2595	85 37 55	2612	83 59 17	2630
28	SUN W.	74 12 44	3063	75 41 39	3081	77 10 12	3098	78 38 24	3115
	Spica W.	26 14 54	2755	27 50 21	2769	29 25 30	2781	31 00 23	2794
	α Aquilæ E.	72 51 49	3174	71 25 09	3199	69 59 00	3225	68 33 21	3252
	SATURN E.	75 52 08	2718	74 15 52	2735	72 39 58	2755	71 04 26	2767
	JUPITER E.	122 04 14	2685	120 27 14	2701	118 50 35	2716	117 14 17	2732
29	SUN W.	85 54 21	3196	87 20 35	3210	88 46 32	3224	90 12 12	3238
	Spica W.	38 50 30	2859	40 23 41	2872	41 56 35	2884	43 29 14	2897
	MARS W.	17 39 33	3180	19 06 06	3183	20 32 36	3186	21 59 03	3189
	α Aquilæ E.	61 33 06	3394	60 10 44	3426	58 48 57	3459	57 27 47	3493
	SATURN E.	63 11 59	2845	61 38 29	2859	60 05 18	2873	58 32 25	2887
	JUPITER E.	109 17 47	2805	107 43 25	2818	106 09 21	2831	104 35 34	2844
30	SUN W.	97 16 34	3302	98 40 43	3314	100 04 38	3325	101 28 21	3335
	Spica W.	51 08 44	2953	52 39 56	2962	54 10 56	2972	55 41 44	2981
	MARS W.	29 09 50	3220	30 35 35	3227	32 01 12	3235	33 26 39	3242
	α Aquilæ E.	50 51 52	3687	49 34 51	3732	48 18 38	3779	47 03 15	3831
	SATURN E.	50 52 16	2951	49 21 03	2963	47 50 04	2975	46 19 20	2987
	JUPITER E.	96 50 34	2901	95 18 17	2912	93 46 14	2922	92 14 23	2931
31	SUN W.	108 24 04	3380	109 46 42	3388	111 09 12	3396	112 31 33	3402
	Spica W.	63 13 02	3021	64 42 48	3028	66 12 26	3034	67 41 56	3040
	MARS W.	40 31 46	3278	41 56 23	3284	43 20 53	3289	44 45 17	3295
	SATURN E.	38 49 13	3041	37 19 51	3052	35 50 43	3063	34 21 48	3074
	α Aquilæ E.	41 00 45	4153	39 51 34	4235	38 43 41	4325	37 37 11	4424
	JUPITER E.	84 37 59	2973	83 07 12	2980	81 36 34	2986	80 06 04	2993

GREENWICH MEAN TIME.										
LUNAR DISTANCES.										
Day of the Month.	Name and Direction of Object.		Midnight.	P. L. of Diff.	XVh	P. L. of Diff.	XVIIIh	P. L. of Diff.	XXIh	P. L. of Diff.
19	α Arietis	W.	70 52 11	2193	72 40 49	2181	74 29 45	2170	76 18 58	2160
	Aldebaran	W.	37 14 26	2081	39 05 55	2071	40 57 39	2062	42 49 37	2053
	SUN	E.	40 13 12	2387	38 29 19	2378	36 45 13	2371	35 00 56	2364
20	α Arietis	W.	85 28 27	2122	87 18 53	2117	89 09 27	2113	91 00 06	2110
	Aldebaran	W.	52 12 30	2019	54 05 34	2015	55 58 45	2011	57 52 02	2007
	SUN	E.	26 17 23	2344	24 32 28	2345	22 47 33	2347	21 02 41	2350
24	SUN	W.	29 59 00	2545	31 39 11	2560	33 19 01	2575	34 58 30	2591
	Antares	E.	67 50 57	2283	66 04 33	2301	64 18 35	2320	62 33 04	2339
	α Aquilæ	E.	116 01 51	2732	114 25 53	2732	112 49 56	2735	111 14 03	2741
25	SUN	W.	43 10 10	2680	44 47 17	2699	46 23 58	2717	48 00 15	2736
	Antares	E.	53 52 36	2442	52 10 01	2465	50 27 58	2488	48 46 27	2511
	α Aquilæ	E.	103 17 01	2788	101 42 17	2801	100 07 50	2814	98 33 40	2828
	SATURN	E.	109 23 24	2357	107 38 47	2374	105 54 35	2392	104 10 49	2410
26	SUN	W.	55 55 16	2835	57 28 59	2854	59 02 16	2874	60 35 09	2894
	Antares	E.	40 27 26	2642	38 49 27	2671	37 12 08	2701	35 35 29	2732
	α Aquilæ	E.	90 47 53	2913	89 15 51	2932	87 44 12	2951	86 12 58	2972
	SATURN	E.	95 38 30	2503	93 57 21	2521	92 16 37	2539	90 36 18	2558
27	SUN	W.	68 13 20	2989	69 43 46	3008	71 13 48	3027	72 43 27	3045
	α Aquilæ	E.	78 43 18	3080	77 14 44	3102	75 46 37	3125	74 19 00	3149
	SATURN	E.	82 21 03	2649	80 43 14	2666	79 05 49	2684	77 28 47	2701
28	SUN	W.	80 06 15	3132	81 33 45	3148	83 00 56	3164	84 27 48	3180
	Spica	W.	32 34 59	2868	34 09 17	2821	35 43 18	2834	37 17 02	2846
	α Aquilæ	E.	67 08 13	3278	65 43 36	3307	64 19 33	3336	62 56 03	3365
	SATURN	E.	69 29 15	2784	67 54 26	2799	66 19 57	2815	64 45 48	2830
	JUPITER	E.	115 38 20	2747	114 02 43	2762	112 27 26	2776	110 52 27	2791
29	SUN	W.	91 37 36	3252	93 02 43	3265	94 27 35	3278	95 52 12	3290
	Spica	W.	45 01 37	2909	46 33 45	2920	48 05 38	2931	49 37 18	2942
	MARS	W.	23 25 25	3194	24 51 42	3199	26 17 52	3205	27 43 55	3212
	α Aquilæ	E.	56 07 15	3528	54 47 22	3565	53 28 09	3604	52 09 39	3644
	SATURN	E.	56 59 49	2901	55 27 31	2914	53 55 30	2927	52 23 45	2939
30	JUPITER	E.	103 02 03	2856	101 28 48	2868	99 55 49	2880	98 23 04	2891
	SUN	W.	102 51 51	3345	104 15 10	3355	105 38 18	3364	107 01 16	3372
	Spica	W.	57 12 21	2990	58 42 46	2998	60 13 01	3006	61 43 06	3014
	MARS	W.	34 51 58	3250	36 17 08	3258	37 42 08	3265	39 07 01	3272
	α Aquilæ	E.	45 48 45	3887	44 35 12	3946	43 22 39	4009	42 11 08	4078
31	SATURN	E.	44 48 51	2998	43 18 36	3009	41 48 35	3020	40 18 47	3031
	JUPITER	E.	90 42 44	2941	89 11 17	2950	87 40 01	2958	86 08 55	2965
	SUN	W.	113 53 47	3409	115 15 53	3415	116 37 53	3420	117 59 47	3425
	Spica	W.	69 11 18	3046	70 40 34	3051	72 09 43	3056	73 38 46	3060
	MARS	W.	46 09 34	3301	47 33 44	3306	48 57 49	3310	50 21 49	3314
	SATURN	E.	32 53 07	3086	31 24 40	3096	29 56 26	3108	28 28 26	3119
	α Aquilæ	E.	36 32 11	4532	35 28 47	4655	34 27 09	4789	33 27 24	4938
	JUPITER	E.	78 35 42	2998	77 05 27	3004	75 35 19	3009	74 05 17	3013

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S						Sidereal Time of Semi-diameter Passing Meridian.	Equation of Time, to be Added to	
		Apparent Right Ascension.	Diff. for 1 Hour.	Apparent Declination.	Diff. for 1 Hour.	Semi-diameter.	Subtracted from Apparent Time.		Diff. for 1 Hour.	
		h m s	s	° ' "	"	"	s	m s	s	
Tues.	1	10 38 08.15	+ 9.080	N. 8 37 27.8	- 54.10	15 52.91	64.42	0 14.46	0.774	
Wed.	2	10 41 45.92	9.067	8 15 45.2	54.45	15 53.14	64.37	0 04.29	0.787	
Thur.	3	10 45 23.38	9.055	7 53 54.6	54.77	15 53.37	64.33	0 23.32	0.799	
Frid.	4	10 49 00.56	+ 9.043	7 31 56.4	- 55.08	15 53.60	64.29	0 42.65	0.811	
Sat.	5	10 52 37.46	9.032	7 09 50.9	55.38	15 53.84	64.25	1 02.24	0.822	
SUN.	6	10 56 14.11	9.022	6 47 38.5	55.66	15 54.08	64.22	1 22.11	0.832	
Mon.	7	10 59 50.54	+ 9.013	6 25 19.4	- 55.94	15 54.32	64.19	1 42.17	0.841	
Tues.	8	11 03 26.76	9.005	6 02 53.8	56.19	15 54.56	64.16	2 02.44	0.849	
Wed.	9	11 07 02.79	8.998	5 40 22.3	56.44	15 54.80	64.13	2 22.90	0.856	
Thur.	10	11 10 38.66	+ 8.992	5 17 44.9	- 56.67	15 55.05	64.11	2 43.53	0.862	
Frid.	11	11 14 14.39	8.987	4 55 02.2	56.89	15 55.30	64.09	3 04.30	0.867	
Sat.	12	11 17 50.00	8.982	4 32 14.3	57.10	15 55.55	64.07	3 25.18	0.872	
SUN.	13	11 21 25.52	+ 8.978	4 09 21.7	- 57.29	15 55.79	64.06	3 46.15	0.876	
Mon.	14	11 25 00.96	8.976	3 46 24.5	57.47	15 56.04	64.04	4 07.21	0.878	
Tues.	15	11 28 36.34	8.974	3 23 23.2	57.64	15 56.30	64.03	4 28.32	0.880	
Wed.	16	11 32 11.69	+ 8.973	3 00 18.1	- 57.79	15 56.55	64.02	4 49.47	0.881	
Thur.	17	11 35 47.02	8.972	2 37 09.5	57.93	15 56.80	64.02	5 10.63	0.882	
Frid.	18	11 39 22.35	8.973	2 13 57.8	58.05	15 57.06	64.02	5 31.79	0.881	
Sat.	19	11 42 57.70	+ 8.974	1 50 43.2	- 58.16	15 57.32	64.02	5 52.93	0.880	
SUN.	20	11 46 33.08	8.975	1 27 26.3	58.26	15 57.58	64.02	6 14.04	0.879	
Mon.	21	11 50 08.51	8.978	1 04 07.2	58.33	15 57.84	64.03	6 35.10	0.876	
Tues.	22	11 53 44.01	+ 8.981	0 40 46.5	- 58.40	15 58.11	64.04	6 56.10	0.873	
Wed.	23	11 57 19.59	8.984	N. 0 17 24.4	58.45	15 58.38	64.06	7 17.02	0.870	
Thur.	24	12 00 55.26	8.989	S. 0 05 58.7	58.48	15 58.65	64.07	7 37.84	0.865	
Frid.	25	12 04 31.05	+ 8.994	0 29 22.4	- 58.50	15 58.92	64.09	7 58.55	0.860	
Sat.	26	12 08 06.96	9.000	0 52 46.5	58.51	15 59.20	64.12	8 19.12	0.854	
SUN.	27	12 11 43.04	9.007	1 16 10.4	58.50	15 59.47	64.15	8 39.54	0.847	
Mon.	28	12 15 19.28	+ 9.014	1 39 34.0	- 58.47	15 59.75	64.18	8 59.80	0.840	
Tues.	29	12 18 55.72	9.022	2 02 56.8	58.43	16 00.04	64.21	9 19.87	0.832	
Wed.	30	12 22 32.36	9.032	2 26 18.4	58.38	16 00.32	64.24	9 39.72	0.822	
Thur.	31	12 26 09.24	+ 9.042	S. 2 49 38.8	- 58.31	16 00.60	64.28	9 59.34	0.812	

NOTE.—The mean time of semidiameter passing the meridian may be found by subtracting 0.18" from the sidereal time.

The sign — prefixed to the hourly change of declination indicates that north declinations are decreasing, or south declinations, increasing.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S				Equation of Time, to be Subtracted from		Diff. for 1 Hour.	Sidereal Time, or Right Ascension of Mean Sun.
		Apparent Right Ascension.	Diff. for 1 Hour.	Apparent Declination.	Diff. for 1 Hour.	Added to Mean Time.			
						m s			
Tues.	1	h m s 10 38 08.12	s +9.082	N. ° ' " 8 37 28.1	" - 54.11	m s 0 14.46	s +0.774	h m s 10 37 53.66	
Wed.	2	10 41 45.93	9.069	8 15 45.1	54.46	0 04.29	0.787	10 41 50.22	
Thur.	3	10 45 23.44	9.057	7 53 54.3	54.78	0 23.33	0.799	10 45 46.77	
Frid.	4	10 49 00.66	+9.045	7 31 55.8	- 55.09	0 42.66	+0.811	10 49 43.32	
Sat.	5	10 52 37.62	9.034	7 09 50.0	55.39	1 02.25	0.822	10 53 39.87	
SUN.	6	10 56 14.32	9.024	6 47 37.2	55.67	1 22.10	0.832	10 57 36.43	
Mon.	7	10 59 50.79	+9.015	6 25 17.8	- 55.95	1 42.19	+0.841	11 01 32.98	
Tues.	8	11 03 27.06	9.007	6 02 51.9	56.20	2 02.47	0.849	11 05 29.53	
Wed.	9	11 07 03.15	9.000	5 40 20.0	56.45	2 22.93	0.856	11 09 26.08	
Thur.	10	11 10 39.07	+8.994	5 17 42.4	- 56.68	2 43.57	+0.862	11 13 22.64	
Frid.	11	11 14 14.85	8.989	4 54 59.3	56.90	3 04.34	0.867	11 17 19.19	
Sat.	12	11 17 50.51	8.984	4 32 11.1	57.11	3 25.23	0.872	11 21 15.74	
SUN.	13	11 21 26.08	+8.980	4 09 18.1	- 57.30	3 46.21	+0.876	11 25 12.29	
Mon.	14	11 25 01.57	8.978	3 46 20.6	57.48	4 07.27	0.878	11 29 08.84	
Tues.	15	11 28 37.01	8.976	3 23 18.9	57.65	4 28.39	0.880	11 33 05.40	
Wed.	16	11 32 12.41	+8.975	3 00 13.5	- 57.80	4 49.54	+0.881	11 37 01.95	
Thur.	17	11 35 47.79	8.974	2 37 04.5	57.94	5 10.71	0.882	11 40 58.50	
Frid.	18	11 39 23.18	8.975	2 13 52.4	58.06	5 31.87	0.881	11 44 55.05	
Sat.	19	11 42 58.58	+8.976	1 50 37.6	- 58.17	5 53.02	+0.880	11 48 51.60	
SUN.	20	11 46 34.02	8.977	1 27 20.2	58.27	6 14.13	0.879	11 52 48.15	
Mon.	21	11 50 09.50	8.980	1 04 00.8	58.34	6 35.20	0.876	11 56 44.70	
Tues.	22	11 53 45.05	+8.983	0 40 39.8	- 58.41	6 56.21	+0.873	12 00 41.26	
Wed.	23	11 57 20.68	8.986	N. 0 17 17.3	58.46	7 17.13	0.870	12 04 37.81	
Thur.	24	12 00 56.41	8.991	S. 0 06 06.2	58.49	7 37.95	0.865	12 08 34.36	
Frid.	25	12 04 32.25	+8.996	0 29 30.2	- 58.51	7 58.66	+0.860	12 12 30.91	
Sat.	26	12 08 08.22	9.002	0 52 54.6	58.52	8 19.24	0.854	12 16 27.46	
SUN.	27	12 11 44.34	9.009	1 16 18.9	58.51	8 39.68	0.847	12 20 24.02	
Mon.	28	12 15 20.64	+9.016	1 39 42.8	- 58.48	8 59.93	+0.840	12 24 20.57	
Tues.	29	12 18 57.12	9.024	2 03 05.9	58.44	9 20.00	0.832	12 28 17.12	
Wed.	30	12 22 33.82	9.034	2 26 27.8	58.39	9 39.85	0.822	12 32 13.67	
Thur.	31	12 26 10.75	+9.044	S. 2 49 48.5	- 58.32	9 59.47	+0.812	12 36 10.22	

NOTE.—The semidiameter for mean noon may be assumed the same as that for apparent noon.
The sign — prefixed to the hourly change of declination indicates that north declinations are decreasing or south declinations increasing.

Diff. for 1 Hour,
+9.8565".
(Table III.)

AT GREENWICH MEAN NOON.														
Day of the Month.	Day of the Year.	THE SUN'S				Logarithm of the Radius Vector of the Earth.	Diff. for 1 Hour.	Mean Time of Sidereal Noon.						
		TRUE LONGITUDE.		Diff. for 1 Hour.	LATITUDE.									
		λ	λ'											
		$^{\circ}$	$'$	$"$	$"$			h	m	s				
1	244	157	52	06.8	51	30.1	+145.16	+	1.04	0.003 9032	- 44.1	13	19	54.93
2	245	158	50	11.4	49	34.6	145.22		1.03	0.003 7969	44.4	13	15	59.02
3	246	159	48	17.5	47	40.6	145.29		0.99	0.003 6899	44.7	13	12	03.12
4	247	160	46	25.2	45	48.2	+145.35	+	0.93	0.003 5821	- 45.0	13	08	07.21
5	248	161	44	34.4	43	57.3	145.42		0.84	0.003 4738	45.3	13	04	11.30
6	249	162	42	45.3	42	08.1	145.49		0.73	0.003 3649	45.5	13	00	15.39
7	250	163	40	57.9	40	20.6	+145.56	+	0.61	0.003 2555	- 45.7	12	56	19.49
8	251	164	39	12.3	38	35.0	145.64		0.48	0.003 1456	45.9	12	52	23.59
9	252	165	37	28.6	36	51.2	145.72		0.35	0.003 0353	46.1	12	48	27.68
10	253	166	35	46.8	35	09.3	+145.80	+	0.22	0.002 9246	- 46.2	12	44	31.77
11	254	167	34	07.0	33	29.4	145.88	+	0.10	0.002 8134	46.4	12	40	35.87
12	255	168	32	29.2	31	51.6	145.97		0.00	0.002 7017	46.7	12	36	39.96
13	256	169	30	53.6	30	15.9	+146.06	-	0.07	0.002 5894	- 46.9	12	32	44.05
14	257	170	29	20.1	28	42.3	146.15		0.13	0.002 4764	47.2	12	28	48.15
15	258	171	27	48.9	27	11.0	146.24		0.15	0.002 3627	47.6	12	24	52.24
16	259	172	26	19.8	25	41.8	+146.33	-	0.12	0.002 2480	- 48.0	12	20	56.34
17	260	173	24	52.9	24	14.8	146.42	-	0.07	0.002 1324	48.4	12	17	00.43
18	261	174	23	28.1	22	50.0	146.51	+	0.01	0.002 0156	48.9	12	13	04.52
19	262	175	22	05.5	21	27.3	+146.60	+	0.12	0.001 8977	- 49.4	12	09	08.62
20	263	176	20	45.0	20	06.7	146.69		0.24	0.001 7786	49.9	12	05	12.71
21	264	177	19	26.5	18	48.1	146.77		0.37	0.001 6582	50.4	12	01	16.81
22	265	178	18	09.9	17	31.5	+146.85	+	0.52	0.001 5366	- 50.9	11	57	20.90
23	266	179	16	55.2	16	16.7	146.93		0.65	0.001 4138	51.4	11	53	24.99
24	267	180	15	42.4	15	03.7	147.00		0.77	0.001 2901	51.8	11	49	29.09
25	268	181	14	31.2	13	52.6	+147.07	+	0.88	0.001 1654	- 52.1	11	45	33.18
26	269	182	13	21.9	12	43.1	147.15		0.95	0.001 0399	52.4	11	41	37.28
27	270	183	12	14.3	11	35.5	147.22		1.00	0.000 9139	52.6	11	37	41.37
28	271	184	11	08.5	10	29.5	+147.29	+	1.03	0.000 7874	- 52.8	11	33	45.47
29	272	185	10	04.3	9	25.3	147.36		1.04	0.000 6606	52.9	11	29	49.56
30	273	186	09	02.0	8	22.9	147.44		1.01	0.000 5337	52.9	11	25	53.65
31	274	187	08	01.4	7	22.3	+147.52	+	0.95	0.000 4068	- 52.9	11	21	57.75
NOTE.—The longitudes in the column λ are referred to the true equinox of their own date, while those in the column λ' are referred to the mean equinox of the beginning of the Besselian fictitious year.									Diff. for 1 Hour, —9.8296". (Table II.)					

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month.	SEMI- DIAMETER.		HORIZONTAL PARALLAX.				UPPER TRANSIT.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 Hour.	Midnight.	Diff. for 1 Hour.	Meridian of Greenwich.	Diff. for 1 Hour.	Noon.
	' "	' "	' "	"	' "	"	h m	m	d
1	14 48.9	14 47.1	54 16.3	- 0.63	54 09.8	- 0.44	8 08.5	+ 1.97	9.7
2	14 45.9	14 45.4	54 05.6	- 0.26	54 03.5	- 0.10	8 55.2	1.93	10.7
3	14 45.3	14 45.8	54 03.3	+ 0.06	54 04.9	+ 0.21	9 41.1	1.89	11.7
4	14 46.7	14 48.0	54 08.3	+ 0.34	54 13.2	+ 0.46	10 26.1	+ 1.86	12.7
5	14 49.7	14 51.8	54 19.5	0.58	54 27.0	0.68	11 10.4	1.84	13.7
6	14 54.2	14 56.8	54 35.7	0.77	54 45.5	0.85	11 54.5	1.83	14.7
7	14 59.7	15 02.9	54 56.2	+ 0.93	55 07.7	+ 0.99	12 38.6	+ 1.85	15.7
8	15 06.2	15 09.8	55 20.0	1.05	55 33.1	1.12	13 23.3	1.89	16.7
9	15 13.5	15 17.5	55 46.9	1.17	56 01.3	1.23	14 09.2	1.95	17.7
10	15 21.6	15 25.9	56 16.4	+ 1.28	56 32.1	+ 1.34	14 56.9	+ 2.03	18.7
11	15 30.3	15 35.0	56 48.5	1.39	57 05.4	1.43	15 46.7	2.13	19.7
12	15 39.7	15 44.6	57 22.9	1.48	57 40.9	1.51	16 39.0	2.23	20.7
13	15 49.6	15 54.6	57 59.2	+ 1.53	58 17.7	+ 1.54	17 33.7	+ 2.32	21.7
14	15 59.7	16 04.7	58 36.2	1.53	58 54.4	1.49	18 30.4	2.39	22.7
15	16 09.5	16 14.0	59 12.1	1.43	59 28.8	1.34	19 28.3	2.42	23.7
16	16 18.2	16 21.9	59 44.2	+ 1.20	59 57.8	+ 1.04	20 26.4	+ 2.41	24.7
17	16 25.0	16 27.4	60 09.2	0.84	60 17.9	0.60	21 23.9	2.37	25.7
18	16 29.0	16 29.6	60 23.6	+ 0.34	60 26.0	+ 0.05	22 20.1	2.31	26.7
19	16 29.3	16 28.0	60 24.8	- 0.25	60 19.9	- 0.57	23 14.9	+ 2.26	27.7
20	16 25.6	16 22.2	60 11.2	0.87	59 59.0	1.16	0		28.7
21	16 18.0	16 12.9	59 43.4	1.43	59 24.8	1.66	0 08.4	2.21	0.3
22	16 07.2	16 00.8	59 03.6	- 1.85	58 40.5	- 1.99	1 00.9	+ 2.17	1.3
23	15 54.2	15 47.2	58 15.9	2.09	57 50.4	2.14	1 52.7	2.14	2.3
24	15 40.2	15 33.2	57 24.5	2.14	56 58.9	2.10	2 43.9	2.12	3.3
25	15 26.4	15 19.9	56 34.0	- 2.03	56 10.3	- 1.91	3 34.6	+ 2.10	4.3
26	15 13.9	15 08.3	55 48.1	1.77	55 27.7	1.61	4 24.8	2.07	5.3
27	15 03.4	14 59.0	55 09.4	1.43	54 53.5	1.23	5 14.2	2.04	6.3
28	14 55.3	14 52.3	54 39.9	- 1.03	54 28.8	- 0.81	6 02.7	+ 2.00	7.3
29	14 50.0	14 48.4	54 20.4	0.60	54 14.5	- 0.38	6 50.0	1.95	8.3
30	14 47.4	14 47.2	54 11.1	- 0.18	54 10.2	+ 0.02	7 36.3	1.91	9.3
31	14 47.6	14 48.6	54 11.7	+ 0.21	54 15.4	+ 0.39	8 21.6	+ 1.87	10.3

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
TUESDAY 1.					THURSDAY 3.				
0	h m s	"	" "	"	0	h m s	"	" "	"
0	18 30 49.67	+ 2.0792	S. 18 02 22.6	+ 1.583	0	20 09 02.58	+ 2.0118	S. 15 15 58.8	+ 5.229
1	18 32 54.38	2.0779	18 00 45.1	1.667	1	20 11 03.25	2.0104	15 10 43.0	5.297
2	18 34 59.02	2.0767	17 59 02.6	1.749	2	20 13 03.83	2.0090	15 05 23.2	5.364
3	18 37 03.58	2.0753	17 57 15.2	1.831	3	20 15 04.33	2.0076	14 59 59.3	5.431
4	18 39 08.06	2.0740	17 55 22.9	1.913	4	20 17 04.74	2.0062	14 54 31.5	5.497
5	18 41 12.46	2.0727	17 53 25.6	1.995	5	20 19 05.07	2.0048	14 48 59.7	5.563
6	18 43 16.78	2.0714	17 51 23.5	2.076	6	20 21 05.32	2.0034	14 43 23.9	5.629
7	18 45 21.03	2.0701	17 49 16.5	2.157	7	20 23 05.48	2.0020	14 37 44.2	5.694
8	18 47 25.19	2.0687	17 47 04.6	2.238	8	20 25 05.56	2.0007	14 32 00.6	5.758
9	18 49 29.27	2.0673	17 44 47.9	2.318	9	20 27 05.56	1.9993	14 26 13.2	5.823
10	18 51 33.27	2.0660	17 42 26.4	2.399	10	20 29 05.48	1.9980	14 20 21.9	5.887
11	18 53 37.19	2.0647	17 40 09.0	2.480	11	20 31 05.32	1.9966	14 14 26.8	5.950
12	18 55 41.03	2.0633	17 37 28.8	2.560	12	20 33 05.07	1.9953	14 08 27.9	6.013
13	18 57 44.79	2.0619	17 34 52.8	2.639	13	20 35 04.75	1.9939	14 02 25.2	6.076
14	18 59 48.46	2.0606	17 32 12.1	2.718	14	20 37 04.34	1.9926	13 56 18.8	6.138
15	19 01 52.06	2.0592	17 29 26.6	2.798	15	20 39 03.86	1.9913	13 50 08.6	6.200
16	19 03 55.57	2.0578	17 26 36.4	2.877	16	20 41 03.30	1.9900	13 43 54.8	6.261
17	19 05 58.99	2.0563	17 23 41.4	2.955	17	20 43 02.66	1.9888	13 37 37.3	6.322
18	19 08 02.33	2.0550	17 20 41.8	3.033	18	20 45 01.95	1.9875	13 31 16.2	6.383
19	19 10 05.59	2.0537	17 17 37.4	3.112	19	20 47 01.16	1.9862	13 24 51.4	6.443
20	19 12 08.77	2.0523	17 14 28.4	3.189	20	20 49 00.29	1.9849	13 18 23.1	6.502
21	19 14 11.86	2.0508	17 11 14.7	3.267	21	20 50 59.35	1.9837	13 11 51.2	6.561
22	19 16 14.86	2.0493	17 07 56.4	3.343	22	20 52 58.33	1.9824	13 05 15.8	6.619
23	19 18 17.78	+ 2.0479	S. 17 04 33.5	+ 3.420	23	20 54 57.24	+ 1.9812	S. 12 58 36.9	+ 6.678
WEDNESDAY 2.					FRIDAY 4.				
0	h m s	"	" "	"	0	h m s	"	" "	"
0	19 20 20.61	+ 2.0465	S. 17 01 06.0	+ 3.497	0	20 56 56.08	+ 1.9800	S. 12 51 54.5	+ 6.735
1	19 22 23.36	2.0451	16 57 33.9	3.572	1	20 58 54.84	1.9788	12 45 08.7	6.793
2	19 24 26.02	2.0436	16 53 57.3	3.648	2	21 00 53.53	1.9776	12 38 19.4	6.850
3	19 26 28.59	2.0422	16 50 16.1	3.724	3	21 02 52.15	1.9764	12 31 26.7	6.906
4	19 28 31.08	2.0408	16 46 30.4	3.799	4	21 04 50.70	1.9753	12 24 30.7	6.961
5	19 30 33.48	2.0393	16 42 40.2	3.874	5	21 06 49.18	1.9741	12 17 31.4	7.016
6	19 32 35.80	2.0378	16 38 45.5	3.948	6	21 08 47.59	1.9730	12 10 28.8	7.071
7	19 34 38.02	2.0363	16 34 46.4	4.023	7	21 10 45.94	1.9719	12 03 22.9	7.126
8	19 36 40.16	2.0349	16 30 42.8	4.097	8	21 12 44.22	1.9708	11 56 13.7	7.180
9	19 38 42.21	2.0335	16 26 34.8	4.170	9	21 14 42.43	1.9696	11 49 01.3	7.233
10	19 40 44.18	2.0321	16 22 22.4	4.243	10	21 16 40.57	1.9686	11 41 45.8	7.285
11	19 42 46.06	2.0306	16 18 05.6	4.316	11	21 18 38.66	1.9676	11 34 27.1	7.338
12	19 44 47.85	2.0291	16 13 44.5	4.388	12	21 20 36.68	1.9665	11 27 05.2	7.390
13	19 46 49.55	2.0277	16 09 19.0	4.461	13	21 22 34.64	1.9655	11 19 40.3	7.441
14	19 48 51.17	2.0263	16 04 49.2	4.533	14	21 24 32.54	1.9645	11 12 12.3	7.493
15	19 50 52.70	2.0248	16 00 15.1	4.603	15	21 26 30.38	1.9635	11 04 41.2	7.543
16	19 52 54.14	2.0233	15 55 36.8	4.674	16	21 28 28.16	1.9626	10 57 07.1	7.593
17	19 54 55.50	2.0219	15 50 54.2	4.746	17	21 30 25.89	1.9617	10 49 30.1	7.642
18	19 56 56.77	2.0204	15 46 07.3	4.816	18	21 32 23.56	1.9607	10 41 50.1	7.691
19	19 58 57.95	2.0190	15 41 16.3	4.885	19	21 34 21.17	1.9598	10 34 07.2	7.739
20	20 00 59.05	2.0176	15 36 21.1	4.955	20	21 36 18.73	1.9589	10 26 21.4	7.787
21	20 03 00.06	2.0162	15 31 21.7	5.024	21	21 38 16.24	1.9580	10 18 32.8	7.834
22	20 05 00.99	2.0148	15 26 18.2	5.093	22	21 40 13.69	1.9572	10 10 41.3	7.881
23	20 07 01.83	2.0133	15 21 10.5	5.162	23	21 42 11.10	1.9564	10 02 47.1	7.928
24	20 09 02.58	+ 2.0118	S. 15 15 58.8	+ 5.229	24	21 44 08.46	+ 1.9556	S. 9 54 50.0	+ 7.974

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
SATURDAY 5.					MONDAY 7.				
0	21 44 08.46	+ 1.9536	S. 9 54 50.0	+ 7.974	0	23 17 32.96	+ 1.9471	S. 2 50 01.3	+ 9.502
1	21 46 05.77	1.9548	9 46 50.2	8.018	1	23 19 29.80	1.9477	2 40 30.7	9.518
2	21 48 03.03	1.9540	9 38 47.8	8.062	2	23 21 26.68	1.9483	2 30 59.1	9.535
3	21 50 00.25	1.9533	9 30 42.7	8.107	3	23 23 23.59	1.9489	2 21 26.5	9.551
4	21 51 57.43	1.9526	9 22 35.0	8.151	4	23 25 20.55	1.9496	2 11 53.0	9.566
5	21 53 54.56	1.9518	9 14 24.6	8.194	5	23 27 17.54	1.9503	2 02 18.6	9.580
6	21 55 51.65	1.9512	9 06 11.7	8.236	6	23 29 14.58	1.9510	1 52 43.4	9.593
7	21 57 48.71	1.9506	8 57 56.3	8.278	7	23 31 11.66	1.9517	1 43 07.4	9.607
8	21 59 45.72	1.9499	8 49 38.3	8.320	8	23 33 08.78	1.9525	1 33 30.6	9.619
9	22 01 42.70	1.9493	8 41 17.9	8.361	9	23 35 05.96	1.9533	1 23 53.1	9.631
10	22 03 39.64	1.9488	8 32 55.0	8.401	10	23 37 03.18	1.9542	1 14 14.9	9.642
11	22 05 36.55	1.9483	8 24 29.8	8.441	11	23 39 00.46	1.9551	1 04 36.1	9.652
12	22 07 33.43	1.9477	8 16 02.1	8.481	12	23 40 57.79	1.9560	0 54 56.7	9.662
13	22 09 30.27	1.9472	8 07 32.1	8.519	13	23 42 55.18	1.9569	0 45 16.7	9.671
14	22 11 27.09	1.9467	7 58 59.8	8.557	14	23 44 52.62	1.9579	0 35 36.2	9.679
15	22 13 23.87	1.9462	7 50 25.3	8.594	15	23 46 50.13	1.9590	0 25 55.2	9.687
16	22 15 20.63	1.9458	7 41 48.5	8.632	16	23 48 47.70	1.9600	0 16 13.8	9.693
17	22 17 17.37	1.9454	7 33 09.5	8.668	17	23 50 45.33	1.9612	S. 0 06 32.0	9.700
18	22 19 14.08	1.9450	7 24 28.4	8.703	18	23 52 43.04	1.9623	N. 0 03 10.2	9.706
19	22 21 10.77	1.9447	7 15 45.1	8.739	19	23 54 40.81	1.9634	0 12 52.7	9.711
20	22 23 07.44	1.9443	7 06 59.7	8.773	20	23 56 38.65	1.9647	0 22 35.5	9.715
21	22 25 04.09	1.9440	6 58 12.3	8.808	21	23 58 36.57	1.9659	0 32 18.5	9.718
22	22 27 00.72	1.9438	6 49 22.8	8.842	22	0 00 34.56	1.9672	0 42 01.7	9.721
23	22 28 57.34	+ 1.9436	S. 6 40 31.3	+ 8.874	23	0 02 32.63	+ 1.9685	N. 0 51 45.0	+ 9.723
SUNDAY 6.					TUESDAY 8.				
0	22 30 53.95	+ 1.9433	S. 6 31 37.9	+ 8.906	0	0 04 30.78	+ 1.9698	N. 1 01 28.4	+ 9.724
1	22 32 50.54	1.9432	6 22 42.6	8.938	1	0 06 29.01	1.9712	1 11 11.9	9.725
2	22 34 47.13	1.9430	6 13 45.3	8.970	2	0 08 27.33	1.9727	1 20 55.4	9.725
3	22 36 43.70	1.9428	6 04 46.2	9.000	3	0 10 25.73	1.9741	1 30 38.9	9.725
4	22 38 40.27	1.9427	5 55 45.3	9.030	4	0 12 24.22	1.9757	1 40 22.4	9.723
5	22 40 36.83	1.9427	5 46 42.6	9.059	5	0 14 22.81	1.9772	1 50 05.7	9.721
6	22 42 33.39	1.9427	5 37 38.2	9.088	6	0 16 21.48	1.9787	1 59 48.9	9.718
7	22 44 29.95	1.9427	5 28 32.0	9.117	7	0 18 20.25	1.9803	2 09 31.8	9.714
8	22 46 26.51	1.9427	5 19 24.2	9.143	8	0 20 19.12	1.9820	2 19 14.6	9.711
9	22 48 23.07	1.9427	5 10 14.8	9.171	9	0 22 18.09	1.9837	2 28 57.1	9.705
10	22 50 19.63	1.9428	5 01 03.7	9.198	10	0 24 17.16	1.9853	2 38 39.2	9.699
11	22 52 16.20	1.9429	4 51 51.1	9.223	11	0 26 16.33	1.9871	2 48 21.0	9.693
12	22 54 12.78	1.9430	4 42 36.9	9.248	12	0 28 15.61	1.9889	2 58 02.3	9.685
13	22 56 09.36	1.9432	4 33 21.3	9.273	13	0 30 15.00	1.9907	3 07 43.2	9.677
14	22 58 05.96	1.9434	4 24 04.2	9.298	14	0 32 14.49	1.9925	3 17 23.6	9.669
15	23 00 02.57	1.9437	4 14 45.6	9.321	15	0 34 14.10	1.9945	3 27 03.5	9.659
16	23 01 59.20	1.9439	4 05 25.7	9.343	16	0 36 13.83	1.9964	3 36 42.7	9.648
17	23 03 55.84	1.9442	3 56 04.5	9.365	17	0 38 13.67	1.9983	3 46 21.3	9.638
18	23 05 52.50	1.9445	3 46 41.9	9.387	18	0 40 13.63	2.0003	3 55 59.3	9.627
19	23 07 49.18	1.9448	3 37 18.1	9.408	19	0 42 13.71	2.0024	4 05 36.5	9.614
20	23 09 45.88	1.9452	3 27 53.0	9.428	20	0 44 13.92	2.0045	4 15 13.0	9.601
21	23 11 42.61	1.9457	3 18 26.8	9.447	21	0 46 14.25	2.0065	4 24 48.6	9.587
22	23 13 39.37	1.9462	3 08 59.4	9.466	22	0 48 14.70	2.0087	4 34 23.4	9.573
23	23 15 36.15	1.9466	2 59 30.9	9.484	23	0 50 15.29	2.0109	4 43 57.3	9.557
24	23 17 32.96	+ 1.9471	S. 2 50 01.3	+ 9.502	24	0 52 16.01	+ 2.0131	N. 4 53 30.2	+ 9.540

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
WEDNESDAY 9.					FRIDAY 11.				
0	h m s	s	N. 4 53 30.2	+ 9.540	0	h m s	s	N. 11 57 35.9	+ 7.813
1	0 52 16.01	+ 2.0131	5 03 02.1	9.523	1	2 32 05.40	+ 2.1578	12 05 23.0	7.757
2	0 54 16.86	2.0153	5 12 33.0	9.506	2	2 34 14.98	2.1615	12 13 06.7	7.700
3	0 56 17.85	2.0177	5 22 02.8	9.487	3	2 36 24.78	2.1653	12 20 47.0	7.642
4	0 58 18.98	2.0200	5 31 31.4	9.468	4	2 38 34.81	2.1690	12 28 23.7	7.585
5	1 00 20.25	2.0223	5 40 58.9	9.448	5	2 40 45.06	2.1727	12 35 56.9	7.528
6	1 02 21.66	2.0248	5 50 25.2	9.427	6	2 42 55.53	2.1764	12 43 26.4	7.462
7	1 04 23.22	2.0273	5 59 50.1	9.405	7	2 45 06.23	2.1802	12 50 52.3	7.400
8	1 06 24.93	2.0297	6 09 13.8	9.383	8	2 47 17.16	2.1840	12 58 14.4	7.337
9	1 08 26.78	2.0321	6 18 36.1	9.359	9	2 49 28.31	2.1878	13 05 32.7	7.273
10	1 10 28.78	2.0347	6 27 56.9	9.335	10	2 51 39.69	2.1917	13 12 47.2	7.209
11	1 12 30.94	2.0373	6 37 16.3	9.311	11	2 53 51.31	2.1955	13 19 57.8	7.144
12	1 14 33.25	2.0398	6 46 34.2	9.285	12	2 56 03.15	2.1993	13 27 04.5	7.078
13	1 16 35.72	2.0425	6 55 50.5	9.258	13	2 58 15.22	2.2031	13 34 07.2	7.011
14	1 18 38.35	2.0452	7 05 05.2	9.231	14	3 00 27.52	2.2070	13 41 05.8	6.943
15	1 20 41.14	2.0478	7 14 18.2	9.203	15	3 02 40.06	2.2109	13 48 00.3	6.874
16	1 22 44.09	2.0506	7 23 29.6	9.175	16	3 04 52.83	2.2148	13 54 50.7	6.805
17	1 24 47.21	2.0533	7 32 39.2	9.144	17	3 07 05.84	2.2187	14 01 36.9	6.734
18	1 26 50.49	2.0562	7 41 46.9	9.113	18	3 09 19.08	2.2226	14 08 18.8	6.663
19	1 28 53.95	2.0590	7 50 52.8	9.083	19	3 11 32.55	2.2265	14 14 56.5	6.592
20	1 30 57.57	2.0618	7 59 56.9	9.052	20	3 13 46.26	2.2304	14 21 29.8	6.518
21	1 33 01.37	2.0648	8 08 59.0	9.018	21	3 16 00.20	2.2343	14 27 58.6	6.443
22	1 35 05.35	2.0678	8 17 59.1	8.984	22	3 18 14.38	2.2383	14 34 23.0	6.369
23	1 37 09.50	2.0707	8 26 57.1	+ 8.949	23	3 20 28.79	2.2422	N. 14 40 42.9	+ 6.294
24	1 39 13.83	+ 2.0737				3 22 43.44	+ 2.2462		
THURSDAY 10.					SATURDAY 12.				
0	1 41 18.34	+ 2.0767	N. 8 35 53.0	+ 8.914	0	3 24 58.33	+ 2.2501	N. 14 46 58.3	+ 6.218
1	1 43 23.03	2.0798	8 44 46.8	8.878	1	3 27 13.45	2.2540	14 53 09.0	6.140
2	1 45 27.91	2.0828	8 53 38.4	8.841	2	3 29 28.81	2.2580	14 59 15.1	6.062
3	1 47 32.97	2.0860	9 02 27.7	8.803	3	3 31 44.41	2.2619	15 05 16.4	5.983
4	1 49 38.23	2.0892	9 11 14.8	8.765	4	3 34 00.24	2.2658	15 11 13.0	5.903
5	1 51 43.67	2.0923	9 19 59.5	8.725	5	3 36 16.31	2.2698	15 17 04.8	5.821
6	1 53 49.30	2.0955	9 28 41.8	8.685	6	3 38 32.62	2.2738	15 22 51.7	5.741
7	1 55 55.13	2.0988	9 37 21.7	8.643	7	3 40 49.16	2.2777	15 28 33.7	5.659
8	1 58 01.16	2.1021	9 45 59.0	8.601	8	3 43 05.94	2.2817	15 34 10.8	5.576
9	2 00 07.38	2.1053	9 54 33.8	8.559	9	3 45 22.96	2.2856	15 39 42.8	5.492
10	2 02 13.80	2.1087	10 03 06.1	8.516	10	3 47 40.21	2.2894	15 45 09.8	5.407
11	2 04 20.42	2.1120	10 11 35.7	8.470	11	3 49 57.69	2.2933	15 50 31.6	5.321
12	2 06 27.24	2.1153	10 20 02.5	8.424	12	3 52 15.41	2.2973	15 55 48.3	5.235
13	2 08 34.26	2.1187	10 28 26.6	8.378	13	3 54 33.36	2.3012	16 00 59.8	5.147
14	2 10 41.49	2.1222	10 36 47.9	8.332	14	3 56 51.55	2.3051	16 06 06.0	5.058
15	2 12 48.93	2.1257	10 45 06.4	8.284	15	3 59 09.97	2.3089	16 11 06.8	4.969
16	2 14 56.57	2.1292	10 53 22.0	8.235	16	4 01 28.62	2.3128	16 16 02.3	4.881
17	2 17 04.43	2.1328	11 01 34.6	8.185	17	4 03 47.50	2.3166	16 20 52.5	4.791
18	2 19 12.50	2.1363	11 09 44.2	8.135	18	4 06 06.61	2.3203	16 25 37.2	4.699
19	2 21 20.78	2.1398	11 17 50.8	8.083	19	4 08 25.94	2.3242	16 30 16.4	4.607
20	2 23 29.27	2.1433	11 25 54.2	8.031	20	4 10 45.51	2.3280	16 34 50.0	4.513
21	2 25 37.98	2.1469	11 33 54.5	7.978	21	4 13 05.30	2.3318	16 39 18.0	4.420
22	2 27 46.90	2.1505	11 41 51.6	7.924	22	4 15 25.32	2.3355	16 43 40.4	4.326
23	2 29 56.04	2.1542	11 49 45.4	7.869	23	4 17 45.56	2.3393	16 47 57.1	4.231
24	2 32 05.40	+ 2.1578	N. 11 57 35.9	+ 7.813	24	4 20 06.03	+ 2.3430	N. 16 52 08.1	+ 4.135

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
SUNDAY 13.					TUESDAY 15.				
0	4 20 06.03	+ 2.3430	N.16 52 08.1	+ 4.135	0	6 16 10.78	+ 2.4761	N.18 07 56.5	- 1.167
1	4 22 26.72	2.3467	16 56 13.3	4.038	1	6 18 39.39	2.4776	18 06 42.9	1.286
2	4 24 47.63	2.3503	17 00 12.6	3.940	2	6 21 08.09	2.4790	18 05 22.2	1.405
3	4 27 08.76	2.3539	17 04 06.1	3.843	3	6 23 36.87	2.4804	18 03 54.3	1.526
4	4 29 30.10	2.3575	17 07 53.7	3.744	4	6 26 05.74	2.4817	18 02 19.1	1.646
5	4 31 51.66	2.3611	17 11 35.4	3.644	5	6 28 34.68	2.4829	18 00 36.8	1.766
6	4 34 13.43	2.3647	17 15 11.0	3.543	6	6 31 03.69	2.4842	17 58 47.2	1.886
7	4 36 35.42	2.3683	17 18 40.6	3.442	7	6 33 32.78	2.4853	17 56 50.5	2.006
8	4 38 57.62	2.3718	17 22 04.1	3.341	8	6 36 01.93	2.4863	17 54 46.5	2.127
9	4 41 20.03	2.3752	17 25 21.5	3.238	9	6 38 31.14	2.4873	17 52 35.3	2.247
10	4 43 42.64	2.3786	17 28 32.7	3.135	10	6 41 00.41	2.4883	17 50 16.9	2.367
11	4 46 05.46	2.3820	17 31 37.7	3.032	11	6 43 29.73	2.4891	17 47 51.3	2.486
12	4 48 28.48	2.3854	17 34 36.5	2.928	12	6 45 59.10	2.4899	17 45 18.6	2.606
13	4 50 51.71	2.3888	17 37 29.0	2.823	13	6 48 28.52	2.4907	17 42 38.6	2.726
14	4 53 15.13	2.3920	17 40 15.2	2.717	14	6 50 57.98	2.4913	17 39 51.5	2.845
15	4 55 38.75	2.3952	17 42 55.0	2.610	15	6 53 27.48	2.4920	17 36 57.2	2.965
16	4 58 02.56	2.3985	17 45 28.4	2.503	16	6 55 57.02	2.4926	17 33 55.7	3.085
17	5 00 26.57	2.4017	17 47 55.4	2.396	17	6 58 26.59	2.4930	17 30 47.0	3.204
18	5 02 50.76	2.4048	17 50 15.9	2.288	18	7 00 56.18	2.4934	17 27 31.2	3.323
19	5 05 15.14	2.4079	17 52 29.9	2.179	19	7 03 25.80	2.4938	17 24 08.2	3.443
20	5 07 39.71	2.4110	17 54 37.4	2.070	20	7 05 55.44	2.4942	17 20 38.1	3.561
21	5 10 04.46	2.4140	17 56 38.3	1.960	21	7 08 25.10	2.4944	17 17 00.9	3.678
22	5 12 29.39	2.4169	17 58 32.6	1.850	22	7 10 54.77	2.4946	17 13 16.7	3.797
23	5 14 54.49	+ 2.4198	N.18 00 20.3	+ 1.739	23	7 13 24.45	+ 2.4947	N.17 09 25.3	- 3.915
MONDAY 14.					WEDNESDAY 16.				
0	5 17 19.77	+ 2.4228	N.18 02 01.3	+ 1.628	0	7 15 54.13	+ 2.4948	N.17 05 26.9	- 4.033
1	5 19 45.22	2.4256	18 03 35.6	1.516	1	7 18 23.82	2.4948	17 01 21.4	4.149
2	5 22 10.84	2.4284	18 05 03.2	1.403	2	7 20 53.50	2.4947	16 57 09.0	4.266
3	5 24 36.63	2.4311	18 06 24.0	1.290	3	7 23 23.18	2.4946	16 52 49.5	4.383
4	5 27 02.57	2.4338	18 07 38.0	1.177	4	7 25 52.85	2.4943	16 48 23.0	4.499
5	5 29 28.68	2.4364	18 08 45.2	1.063	5	7 28 22.50	2.4941	16 43 49.6	4.614
6	5 31 54.94	2.4390	18 09 45.5	0.948	6	7 30 52.14	2.4939	16 39 09.3	4.729
7	5 34 21.36	2.4416	18 10 39.0	0.834	7	7 33 21.77	2.4936	16 34 22.1	4.844
8	5 36 47.93	2.4441	18 11 25.6	0.719	8	7 35 51.37	2.4931	16 29 28.0	4.959
9	5 39 14.65	2.4465	18 12 05.3	0.603	9	7 38 20.94	2.4926	16 24 27.0	5.073
10	5 41 41.51	2.4488	18 12 38.0	0.488	10	7 40 50.48	2.4921	16 19 19.3	5.185
11	5 44 08.51	2.4512	18 13 03.8	0.372	11	7 43 19.99	2.4916	16 14 04.8	5.298
12	5 46 35.65	2.4534	18 13 22.6	0.255	12	7 45 49.47	2.4910	16 08 43.5	5.411
13	5 49 02.92	2.4557	18 13 34.4	0.138	13	7 48 18.91	2.4903	16 03 15.5	5.523
14	5 51 30.33	2.4578	18 13 39.1	+ 0.020	14	7 50 48.30	2.4895	15 57 40.8	5.633
15	5 53 57.86	2.4598	18 13 36.8	- 0.097	15	7 53 17.65	2.4887	15 51 59.5	5.744
16	5 56 25.51	2.4619	18 13 27.5	0.215	16	7 55 46.95	2.4878	15 46 11.5	5.854
17	5 58 53.29	2.4639	18 13 11.0	0.333	17	7 58 16.19	2.4869	15 40 17.0	5.963
18	6 01 21.18	2.4658	18 12 47.5	0.452	18	8 00 45.38	2.4861	15 34 16.0	6.071
19	6 03 49.18	2.4677	18 12 16.8	0.570	19	8 03 14.52	2.4851	15 28 08.5	6.179
20	6 06 17.30	2.4695	18 11 39.1	0.688	20	8 05 43.59	2.4840	15 21 54.5	6.287
21	6 08 45.52	2.4712	18 10 54.2	0.808	21	8 08 12.60	2.4830	15 15 34.1	6.393
22	6 11 13.84	2.4728	18 10 02.1	0.928	22	8 10 41.55	2.4818	15 09 07.4	6.498
23	6 13 42.26	2.4745	18 09 02.9	1.047	23	8 13 10.42	2.4806	15 02 34.3	6.603
24	6 16 10.78	+ 2.4761	N.18 07 56.5	- 1.167	24	8 15 39.22	+ 2.4794	N.14 55 55.0	- 6.708

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
THURSDAY 17.					SATURDAY 19.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
0	8 15 39.22	+ 2.4794	N. 14 55 55.0	- 6.708	0	10 12 38.47	+ 2.3873	N. 7 52 32.4	- 10.497
1	8 18 07.95	2.4782	14 49 09.4	6.811	1	10 15 01.64	2.3850	7 42 01.1	10.545
2	8 20 36.60	2.4768	14 42 17.7	6.913	2	10 17 24.67	2.3828	7 31 27.0	10.592
3	8 23 05.17	2.4755	14 35 19.8	7.015	3	10 19 47.57	2.3806	7 20 50.1	10.638
4	8 25 33.66	2.4741	14 28 15.9	7.116	4	10 22 10.34	2.3783	7 10 10.4	10.684
5	8 28 02.06	2.4726	14 21 05.9	7.216	5	10 24 32.97	2.3761	6 59 28.0	10.727
6	8 30 30.37	2.4712	14 13 50.0	7.314	6	10 26 55.47	2.3739	6 48 43.1	10.768
7	8 32 58.60	2.4698	14 06 28.2	7.412	7	10 29 17.84	2.3718	6 37 55.8	10.809
8	8 35 26.74	2.4682	13 59 00.5	7.510	8	10 31 40.08	2.3696	6 27 06.0	10.849
9	8 37 54.78	2.4665	13 51 27.0	7.607	9	10 34 02.19	2.3673	6 16 13.9	10.888
10	8 40 22.72	2.4649	13 43 47.7	7.702	10	10 36 24.16	2.3652	6 05 19.5	10.924
11	8 42 50.57	2.4633	13 36 02.8	7.796	11	10 38 46.01	2.3630	5 54 23.0	10.959
12	8 45 18.32	2.4616	13 28 12.2	7.890	12	10 41 07.72	2.3608	5 43 24.4	10.993
13	8 47 45.96	2.4598	13 20 16.0	7.983	13	10 43 29.30	2.3587	5 32 23.8	11.025
14	8 50 13.50	2.4582	13 12 14.3	8.073	14	10 45 50.76	2.3566	5 21 21.4	11.056
15	8 52 40.94	2.4564	13 04 07.2	8.163	15	10 48 12.09	2.3544	5 10 17.1	11.086
16	8 55 08.27	2.4546	12 55 54.7	8.253	16	10 50 33.29	2.3523	4 59 11.1	11.114
17	8 57 35.49	2.4528	12 47 36.8	8.342	17	10 52 54.36	2.3501	4 48 03.4	11.141
18	9 00 02.60	2.4508	12 39 13.6	8.429	18	10 55 15.30	2.3480	4 36 54.2	11.166
19	9 02 29.59	2.4489	12 30 45.3	8.515	19	10 57 36.12	2.3460	4 25 43.5	11.190
20	9 04 56.47	2.4471	12 22 11.8	8.601	20	10 59 56.82	2.3439	4 14 31.4	11.213
21	9 07 23.24	2.4452	12 13 33.2	8.685	21	11 02 17.39	2.3418	4 03 17.9	11.235
22	9 09 49.89	2.4432	12 04 49.6	8.768	22	11 04 37.84	2.3398	3 52 03.2	11.254
23	9 12 16.42	+ 2.4418	N. 11 56 01.0	- 8.850	23	11 06 58.17	+ 2.3378	N. 3 40 47.4	- 11.273
FRIDAY 18.					SUNDAY 20.				
0	9 14 42.83	+ 2.4392	N. 11 47 07.6	- 8.930	0	11 09 18.37	+ 2.3357	N. 3 29 30.5	- 11.290
1	9 17 09.12	2.4372	11 38 09.4	9.010	1	11 11 38.45	2.3337	3 18 12.6	11.306
2	9 19 35.29	2.4352	11 29 06.4	9.088	2	11 13 58.42	2.3318	3 06 53.8	11.320
3	9 22 01.34	2.4331	11 19 58.8	9.165	3	11 16 18.26	2.3298	2 55 34.2	11.333
4	9 24 27.26	2.4309	11 10 46.6	9.241	4	11 18 37.99	2.3278	2 44 13.9	11.344
5	9 26 53.05	2.4288	11 01 29.9	9.316	5	11 20 57.60	2.3258	2 32 52.9	11.355
6	9 29 18.72	2.4268	10 52 08.7	9.389	6	11 23 17.09	2.3239	2 21 31.3	11.365
7	9 31 44.26	2.4247	10 42 43.2	9.462	7	11 25 36.47	2.3221	2 10 09.3	11.371
8	9 34 09.68	2.4226	10 33 13.3	9.533	8	11 27 55.74	2.3202	1 58 46.8	11.378
9	9 36 34.97	2.4204	10 23 39.2	9.603	9	11 30 14.89	2.3183	1 47 24.0	11.383
10	9 39 00.13	2.4182	10 14 01.0	9.672	10	11 32 33.94	2.3165	1 36 00.9	11.386
11	9 41 25.16	2.4160	10 04 18.6	9.739	11	11 34 52.87	2.3146	1 24 37.7	11.388
12	9 43 50.05	2.4138	9 54 32.3	9.805	12	11 37 11.69	2.3128	1 13 14.4	11.388
13	9 46 14.82	2.4117	9 44 42.0	9.870	13	11 39 30.40	2.3110	1 01 51.1	11.389
14	9 48 39.45	2.4094	9 34 47.9	9.933	14	11 41 49.01	2.3093	0 50 27.9	11.386
15	9 51 03.95	2.4073	9 24 50.0	9.995	15	11 44 07.51	2.3075	0 39 04.8	11.383
16	9 53 28.32	2.4050	9 14 48.5	10.056	16	11 46 25.91	2.3058	0 27 42.0	11.378
17	9 55 52.55	2.4028	9 04 43.3	10.116	17	11 48 44.20	2.3040	0 16 19.5	11.372
18	9 58 16.66	2.4007	8 54 34.6	10.174	18	11 51 02.39	2.3023	N. 0 04 57.4	11.365
19	10 00 40.63	2.3984	8 44 22.4	10.232	19	11 53 20.48	2.3007	S. 0 06 24.3	11.357
20	10 03 04.47	2.3962	8 34 06.8	10.287	20	11 55 38.47	2.2990	0 17 45.4	11.347
21	10 05 28.17	2.3938	8 23 48.0	10.341	21	11 57 56.36	2.2973	0 29 05.9	11.335
22	10 07 51.73	2.3917	8 13 25.9	10.394	22	12 00 14.15	2.2957	0 40 25.6	11.323
23	10 10 15.17	2.3895	8 03 00.7	10.446	23	12 02 31.84	2.2940	0 51 44.6	11.310
24	10 12 38.47	+ 2.3873	N. 7 52 32.4	- 10.497	24	12 04 49.43	+ 2.2924	S. 1 03 02.8	- 11.295

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
MONDAY 21.					WEDNESDAY 23.				
0	12 04 49.43	+ 2.2924	S. 1 03 02.8	- 11.295	0	13 53 23.06	+ 2.2371	S. 9 26 07.5	- 9.271
1	12 07 06.93	2.2909	1 14 20.0	11.278	1	13 55 37.26	2.2363	9 35 21.8	9.206
2	12 09 24.34	2.2893	1 25 36.2	11.261	2	13 57 51.41	2.2354	9 44 32.2	9.141
3	12 11 41.65	2.2878	1 36 51.3	11.243	3	14 00 05.51	2.2346	9 53 38.7	9.074
4	12 13 58.88	2.2863	1 48 05.3	11.223	4	14 02 19.56	2.2338	10 02 41.1	9.007
5	12 16 16.01	2.2848	1 59 18.1	11.202	5	14 04 33.56	2.2330	10 11 39.5	8.938
6	12 18 33.06	2.2834	2 10 29.5	11.178	6	14 06 47.52	2.2322	10 20 33.7	8.869
7	12 20 50.02	2.2819	2 21 39.5	11.155	7	14 09 01.42	2.2313	10 29 23.8	8.800
8	12 23 06.89	2.2804	2 32 48.1	11.132	8	14 11 15.28	2.2307	10 38 09.7	8.730
9	12 25 23.67	2.2790	2 43 55.3	11.106	9	14 13 29.10	2.2299	10 46 51.4	8.659
10	12 27 40.37	2.2777	2 55 00.8	11.078	10	14 15 42.87	2.2291	10 55 28.8	8.588
11	12 29 56.99	2.2763	3 06 04.7	11.050	11	14 17 56.59	2.2283	11 04 01.9	8.516
12	12 32 13.53	2.2750	3 17 06.8	11.020	12	14 20 10.27	2.2276	11 12 30.7	8.443
13	12 34 29.99	2.2737	3 28 07.1	10.990	13	14 22 23.90	2.2268	11 20 55.1	8.370
14	12 36 46.37	2.2723	3 39 05.6	10.958	14	14 24 37.49	2.2261	11 29 15.1	8.296
15	12 39 02.67	2.2710	3 50 02.1	10.925	15	14 26 51.03	2.2253	11 37 30.6	8.221
16	12 41 18.89	2.2697	4 00 56.6	10.891	16	14 29 04.53	2.2247	11 45 41.6	8.146
17	12 43 35.03	2.2684	4 11 49.0	10.856	17	14 31 17.99	2.2239	11 53 48.1	8.070
18	12 45 51.10	2.2672	4 22 39.3	10.820	18	14 33 31.40	2.2231	12 01 50.0	7.994
19	12 48 07.10	2.2660	4 33 27.4	10.783	19	14 35 44.76	2.2224	12 09 47.4	7.917
20	12 50 23.02	2.2648	4 44 13.2	10.744	20	14 37 58.09	2.2217	12 17 40.1	7.839
21	12 52 38.87	2.2636	4 54 56.7	10.704	21	14 40 11.37	2.2209	12 25 28.1	7.762
22	12 54 54.65	2.2624	5 05 37.7	10.663	22	14 42 24.60	2.2202	12 33 11.5	7.684
23	12 57 10.36	+ 2.2613	S. 5 16 16.3	- 10.622	23	14 44 37.79	+ 2.2195	S. 12 40 50.2	- 7.605
TUESDAY 22.					THURSDAY 24.				
0	12 59 26.00	+ 2.2601	S. 5 26 52.4	- 10.580	0	14 46 50.94	+ 2.2188	S. 12 48 24.1	- 7.525
1	13 01 41.57	2.2590	5 37 25.9	10.536	1	14 49 04.04	2.2180	12 55 53.2	7.445
2	13 03 57.08	2.2579	5 47 56.7	10.491	2	14 51 17.10	2.2173	13 03 17.5	7.365
3	13 06 12.52	2.2568	5 58 24.8	10.446	3	14 53 30.11	2.2165	13 10 37.0	7.284
4	13 08 27.90	2.2558	6 08 50.2	10.399	4	14 55 43.08	2.2158	13 17 51.6	7.203
5	13 10 43.21	2.2547	6 19 12.7	10.351	5	14 57 56.01	2.2151	13 25 01.4	7.122
6	13 12 58.46	2.2536	6 29 32.3	10.303	6	15 00 08.89	2.2143	13 32 06.2	7.038
7	13 15 13.64	2.2526	6 39 49.0	10.253	7	15 02 21.72	2.2135	13 39 06.0	6.956
8	13 17 28.77	2.2516	6 50 02.6	10.202	8	15 04 34.51	2.2128	13 46 00.9	6.873
9	13 19 43.83	2.2506	7 00 13.2	10.151	9	15 06 47.26	2.2121	13 52 50.8	6.790
10	13 21 58.84	2.2496	7 10 20.7	10.098	10	15 08 59.96	2.2113	13 59 35.7	6.706
11	13 24 13.78	2.2486	7 20 25.0	10.045	11	15 11 12.61	2.2105	14 06 15.5	6.622
12	13 26 28.67	2.2477	7 30 26.1	9.991	12	15 13 25.22	2.2098	14 12 50.3	6.538
13	13 28 43.50	2.2467	7 40 23.9	9.935	13	15 15 37.78	2.2090	14 19 20.0	6.453
14	13 30 58.27	2.2458	7 50 18.3	9.878	14	15 17 50.30	2.2082	14 25 44.6	6.368
15	13 33 12.99	2.2449	8 00 09.3	9.822	15	15 20 02.76	2.2073	14 32 04.1	6.282
16	13 35 27.66	2.2440	8 09 56.9	9.764	16	15 22 15.18	2.2067	14 38 18.4	6.196
17	13 37 42.27	2.2430	8 19 41.0	9.705	17	15 24 27.56	2.2058	14 44 27.6	6.110
18	13 39 56.82	2.2421	8 29 21.5	9.646	18	15 26 39.88	2.2050	14 50 31.6	6.023
19	13 42 11.32	2.2413	8 38 58.5	9.586	19	15 28 52.16	2.2042	14 56 30.4	5.937
20	13 44 25.77	2.2404	8 48 31.8	9.524	20	15 31 04.38	2.2033	15 02 24.0	5.849
21	13 46 40.17	2.2396	8 58 01.4	9.462	21	15 33 16.56	2.2025	15 08 12.3	5.762
22	13 48 54.52	2.2387	9 07 27.2	9.399	22	15 35 28.68	2.2017	15 13 55.4	5.674
23	13 51 08.81	2.2378	9 16 49.3	9.336	23	15 37 40.76	2.2008	15 19 33.2	5.587
24	13 53 23.06	+ 2.2371	S. 9 26 07.5	- 9.271	24	15 39 52.78	+ 2.1999	S. 15 25 05.8	- 5.499

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
FRIDAY 25.					SUNDAY 27.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
0	15 39 52.78	+ 2.1999	S. 15 25 05.8	- 5.499	0	17 24 16.60	+ 2.1451	S. 18 05 01.9	- 1.153
1	15 42 04.75	2.1991	15 30 33.1	5.410	1	17 26 25.26	2.1436	18 06 08.4	1.063
2	15 44 16.67	2.1983	15 35 55.0	5.322	2	17 28 33.83	2.1421	18 07 09.5	0.973
3	15 46 28.54	2.1974	15 41 11.7	5.233	3	17 30 42.31	2.1406	18 08 05.2	0.884
4	15 48 40.36	2.1965	15 46 23.0	5.143	4	17 32 50.70	2.1391	18 08 55.6	0.795
5	15 50 52.12	2.1955	15 51 28.9	5.054	5	17 34 59.00	2.1375	18 09 40.6	0.705
6	15 53 03.82	2.1946	15 56 29.5	4.965	6	17 37 07.20	2.1360	18 10 20.2	0.616
7	15 55 15.47	2.1937	16 01 24.7	4.876	7	17 39 15.32	2.1345	18 10 54.5	0.528
8	15 57 27.07	2.1928	16 06 14.6	4.786	8	17 41 23.34	2.1329	18 11 23.5	0.439
9	15 59 38.60	2.1918	16 10 59.0	4.696	9	17 43 31.27	2.1314	18 11 47.2	0.351
10	16 01 50.08	2.1909	16 15 38.1	4.607	10	17 45 39.11	2.1298	18 12 05.6	0.262
11	16 04 01.51	2.1899	16 20 11.8	4.516	11	17 47 46.85	2.1283	18 12 18.6	0.173
12	16 06 12.87	2.1889	16 24 40.0	4.425	12	17 49 54.50	2.1267	18 12 26.4	- 0.086
13	16 08 24.18	2.1879	16 29 02.8	4.335	13	17 52 02.05	2.1251	18 12 28.9	+ 0.002
14	16 10 35.42	2.1868	16 33 20.2	4.245	14	17 54 09.51	2.1235	18 12 26.1	0.090
15	16 12 46.60	2.1859	16 37 32.2	4.154	15	17 56 16.87	2.1218	18 12 18.1	0.178
16	16 14 57.73	2.1850	16 41 38.7	4.063	16	17 58 24.13	2.1202	18 12 04.8	0.264
17	16 17 08.80	2.1839	16 45 39.8	3.973	17	18 00 31.29	2.1185	18 11 46.4	0.351
18	16 19 19.80	2.1828	16 49 35.4	3.882	18	18 02 38.35	2.1168	18 11 22.7	0.438
19	16 21 30.73	2.1817	16 53 25.6	3.791	19	18 04 45.31	2.1152	18 10 53.8	0.525
20	16 23 41.60	2.1806	16 57 10.3	3.699	20	18 06 52.18	2.1136	18 10 19.7	0.612
21	16 25 52.40	2.1795	17 00 49.5	3.608	21	18 08 58.94	2.1119	18 09 40.4	0.698
22	16 28 03.14	2.1784	17 04 23.3	3.518	22	18 11 05.61	2.1103	18 08 56.0	0.783
23	16 30 13.81	+ 2.1773	S. 17 07 51.6	- 3.426	23	18 13 12.17	+ 2.1085	S. 18 08 06.5	+ 0.868
SATURDAY 26.					MONDAY 28.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
0	16 32 24.41	+ 2.1762	S. 17 11 14.4	- 3.334	0	18 15 18.63	+ 2.1068	S. 18 07 11.8	+ 0.954
1	16 34 34.95	2.1750	17 14 31.7	3.243	1	18 17 24.99	2.1051	18 06 12.0	1.039
2	16 36 45.41	2.1738	17 17 43.6	3.152	2	18 19 31.24	2.1034	18 05 07.1	1.124
3	16 38 55.81	2.1727	17 20 50.0	3.061	3	18 21 37.40	2.1017	18 03 57.1	1.209
4	16 41 06.14	2.1716	17 23 50.9	2.969	4	18 23 43.45	2.0999	18 02 42.0	1.293
5	16 43 16.40	2.1703	17 26 46.3	2.878	5	18 25 49.39	2.0982	18 01 21.9	1.378
6	16 45 26.58	2.1691	17 29 36.3	2.788	6	18 27 55.23	2.0965	17 59 56.7	1.462
7	16 47 36.69	2.1679	17 32 20.8	2.696	7	18 30 00.97	2.0948	17 58 26.5	1.545
8	16 49 46.73	2.1667	17 34 59.8	2.605	8	18 32 06.60	2.0930	17 56 51.3	1.628
9	16 51 56.69	2.1653	17 37 33.4	2.513	9	18 34 12.13	2.0912	17 55 11.1	1.711
10	16 54 06.57	2.1641	17 40 01.4	2.422	10	18 36 17.55	2.0894	17 53 26.0	1.793
11	16 56 16.38	2.1629	17 42 24.0	2.332	11	18 38 22.86	2.0877	17 51 35.9	1.877
12	16 58 26.12	2.1617	17 44 41.2	2.241	12	18 40 28.07	2.0859	17 49 40.8	1.959
13	17 00 35.78	2.1603	17 46 52.9	2.149	13	18 42 33.17	2.0842	17 47 40.8	2.041
14	17 02 45.35	2.1589	17 48 59.1	2.058	14	18 44 38.17	2.0824	17 45 35.9	2.122
15	17 04 54.85	2.1576	17 50 59.8	1.967	15	18 46 43.06	2.0806	17 43 26.2	2.203
16	17 07 04.26	2.1563	17 52 55.1	1.877	16	18 48 47.84	2.0788	17 41 11.5	2.285
17	17 09 13.60	2.1549	17 54 45.0	1.786	17	18 50 52.52	2.0771	17 38 52.0	2.365
18	17 11 22.85	2.1535	17 56 29.4	1.695	18	18 52 57.09	2.0753	17 36 27.7	2.445
19	17 13 32.02	2.1522	17 58 08.4	1.604	19	18 55 01.55	2.0734	17 33 58.6	2.526
20	17 15 41.11	2.1508	17 59 41.9	1.513	20	18 57 05.90	2.0717	17 31 24.6	2.606
21	17 17 50.11	2.1493	18 01 10.0	1.423	21	18 59 10.15	2.0699	17 28 45.9	2.684
22	17 19 59.02	2.1478	18 02 32.7	1.333	22	19 01 14.29	2.0681	17 26 02.5	2.763
23	17 22 07.85	2.1465	18 03 50.0	1.243	23	19 03 18.32	2.0663	17 23 14.3	2.843
24	17 24 16.60	+ 2.1451	S. 18 05 01.9	- 1.153	24	19 05 22.24	+ 2.0645	S. 17 20 21.3	+ 2.922

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
TUESDAY 29.					THURSDAY, OCTOBER 1.				
0	19 05 22.24	+ 2.0645	S. 17 20 21.3	+ 2.922	0	20 42 30.13	+ 1.9863	S. 13 36 17.6	+ 6.270
1	19 07 26.06	2.0627	17 17 23.7	2.999	PHASES OF THE MOON.				
2	19 09 29.77	2.0609	17 14 21.4	3.077					
3	19 11 33.37	2.0592	17 11 14.4	3.156					
4	19 13 36.87	2.0574	17 08 02.7	3.233					
5	19 15 40.26	2.0556	17 04 46.5	3.309					
6	19 17 43.54	2.0538	17 01 25.6	3.386					
7	19 19 46.72	2.0521	16 58 00.2	3.462					
8	19 21 49.79	2.0503	16 54 30.2	3.538					
9	19 23 52.75	2.0485	16 50 55.7	3.613					
10	19 25 55.61	2.0467	16 47 16.6	3.689					
11	19 27 58.36	2.0449	16 43 33.0	3.763	PHASES OF THE MOON.				
12	19 30 01.00	2.0432	16 39 45.0	3.837					
13	19 32 03.54	2.0414	16 35 52.5	3.912					
14	19 34 05.97	2.0397	16 31 55.5	3.986					
15	19 36 08.30	2.0380	16 27 54.2	4.059	PHASES OF THE MOON.				
16	19 38 10.53	2.0363	16 23 48.4	4.132					
17	19 40 12.65	2.0345	16 19 38.3	4.205					
18	19 42 14.67	2.0328	16 15 23.8	4.278					
19	19 44 16.59	2.0312	16 11 04.9	4.350	PHASES OF THE MOON.				
20	19 46 18.41	2.0294	16 06 41.8	4.421					
21	19 48 20.12	2.0277	16 02 14.4	4.493					
22	19 50 21.73	2.0260	15 57 42.7	4.564					
23	19 52 23.24	+ 2.0243	S. 15 53 06.7	+ 4.634	PHASES OF THE MOON.				
WEDNESDAY 30.									
0	19 54 24.65	+ 2.0227	S. 15 48 26.6	+ 4.703					
1	19 56 25.96	2.0210	15 43 42.3	4.774					
2	19 58 27.17	2.0193	15 38 53.7	4.844	PHASES OF THE MOON.				
3	20 00 28.28	2.0177	15 34 01.0	4.912					
4	20 02 29.29	2.0161	15 29 04.3	4.980					
5	20 04 30.21	2.0145	15 24 03.4	5.049					
6	20 06 31.03	2.0128	15 18 58.4	5.117	PHASES OF THE MOON.				
7	20 08 31.75	2.0112	15 13 49.4	5.184					
8	20 10 32.38	2.0097	15 08 36.3	5.252					
9	20 12 32.91	2.0081	15 03 19.2	5.318					
10	20 14 33.35	2.0066	14 57 58.1	5.384	PHASES OF THE MOON.				
11	20 16 33.70	2.0050	14 52 33.1	5.450					
12	20 18 33.95	2.0034	14 47 04.1	5.516					
13	20 20 34.11	2.0019	14 41 31.2	5.581					
14	20 22 34.18	2.0005	14 35 54.4	5.646	PHASES OF THE MOON.				
15	20 24 34.17	1.9990	14 30 13.7	5.710					
16	20 26 34.06	1.9974	14 24 29.2	5.774					
17	20 28 33.86	1.9960	14 18 40.8	5.837					
18	20 30 33.58	1.9946	14 12 48.7	5.900	PHASES OF THE MOON.				
19	20 32 33.21	1.9932	14 06 52.8	5.963					
20	20 34 32.76	1.9918	14 00 53.1	6.025					
21	20 36 32.23	1.9904	13 54 49.8	6.087					
22	20 38 31.61	1.9890	13 48 42.7	6.148	PHASES OF THE MOON.				
23	20 40 30.91	1.9877	13 42 32.0	6.209					
24	20 42 30.13	+ 1.9863	S. 13 36 17.6	+ 6.270					

		d	h	m
○	Full Moon	Sept.	6	12 19.9
☾	Last Quarter		14	01 13.6
●	New Moon		20	16 30.8
☾	First Quarter		28	01 08.5

		d	h
☾	Apogee	Sept.	2 19.3
☾	Perigee		18 14.3
☾	Apogee		30 10.5

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Noon.	P. L. of Diff.	III ^h	P. L. of Diff.	VI ^h	P. L. of Diff.	IX ^h	P. L. of Diff.
			" " "		" " "		" " "		" " "	
1	SUN	W.	119 21 35	3430	120 43 18	3434	122 04 56	3438	123 26 30	3440
	Spica	W.	75 07 44	3065	76 36 37	3068	78 05 26	3071	79 34 11	3074
	MARS	W.	51 45 44	3319	53 09 34	3322	54 33 20	3325	55 57 03	3327
	Antares	W.	30 30 34	3268	31 55 23	3257	33 20 25	3246	34 45 40	3236
	JUPITER	E.	72 35 20	3018	71 05 29	3021	69 35 42	3024	68 05 59	3007
	α Arietis	E.	117 20 19	3186	115 53 53	3188	114 27 29	3188	113 01 05	3188
2	Spica	W.	86 57 12	3082	88 25 43	3083	89 54 13	3084	91 22 42	3083
	MARS	W.	62 55 00	3335	64 18 31	3336	65 42 01	3336	67 05 31	3336
	Antares	W.	41 54 37	3197	43 20 50	3192	44 47 09	3186	46 13 35	3181
	JUPITER	E.	60 38 12	3036	59 08 44	3038	57 39 18	3038	56 09 52	3039
	α Arietis	E.	105 49 05	3187	104 22 40	3186	102 56 14	3184	101 29 46	3183
3	Spica	W.	98 45 19	3079	100 13 54	3077	101 42 32	3075	103 11 12	3073
	MARS	W.	74 03 10	3331	75 26 46	3328	76 50 25	3325	78 14 07	3324
	Antares	W.	53 27 17	3156	54 54 19	3151	56 21 27	3146	57 48 41	3140
	JUPITER	E.	48 42 43	3035	47 13 14	3034	45 43 44	3033	44 14 12	3030
	α Arietis	E.	94 17 03	3175	92 50 24	3173	91 23 43	3170	89 56 58	3168
4	Spica	W.	110 35 23	3057	112 04 25	3053	113 33 32	3050	115 02 43	3041
	MARS	W.	85 13 23	3307	86 37 26	3303	88 01 34	3299	89 25 47	3294
	Antares	W.	65 06 26	3115	66 34 17	3110	68 02 15	3105	69 30 19	3099
	JUPITER	E.	36 45 53	3020	35 16 05	3018	33 46 14	3015	32 16 20	3013
	α Arietis	E.	82 42 30	3154	81 15 26	3152	79 48 19	3148	78 21 07	3145
	Aldebaran	E.	115 41 51	3049	114 12 39	3045	112 43 22	3041	111 14 00	3036
5	MARS	W.	96 28 14	3270	97 53 01	3264	99 17 55	3259	100 42 55	3253
	Antares	W.	76 52 26	3069	78 21 13	3064	79 50 07	3057	81 19 09	3051
	α Aquilæ	W.	34 44 06	4588	35 46 41	4469	36 51 00	4363	37 56 55	4267
	SATURN	W.	21 47 03	3124	23 14 44	3105	24 42 48	3087	26 11 13	3071
	α Arietis	E.	71 04 12	3129	69 36 37	3126	68 08 59	3123	66 41 17	3120
	Aldebaran	E.	103 45 42	3012	102 15 44	3006	100 45 39	3001	99 15 27	2995
6	MARS	W.	107 49 39	3222	109 15 22	3217	110 41 11	3209	112 07 09	3204
	Antares	W.	88 46 13	3020	90 16 01	3013	91 45 58	3007	93 16 02	3000
	α Aquilæ	W.	43 46 28	3905	44 59 43	3849	46 13 55	3797	47 29 00	3750
	SATURN	W.	33 37 49	3007	35 07 53	2996	36 38 11	2985	38 08 42	2975
	α Arietis	E.	59 22 00	3108	57 54 00	3107	56 25 59	3105	54 57 56	3105
	Aldebaran	E.	91 42 38	2965	90 11 41	2958	88 40 35	2951	87 09 21	2945
7	Antares	W.	100 48 27	2968	102 19 20	2961	103 50 22	2954	105 21 32	2948
	α Aquilæ	W.	53 55 45	3560	55 15 03	3528	56 34 56	3498	57 55 22	3471
	SATURN	W.	45 44 21	2929	47 16 03	2920	48 47 56	2912	50 20 00	2902
	α Arietis	E.	47 37 40	3110	46 09 42	3113	44 41 48	3118	43 14 00	3123
	Aldebaran	E.	79 31 04	2910	77 58 58	2902	76 26 42	2895	74 54 17	2888
8	α Aquilæ	W.	64 44 39	3355	66 07 47	3336	67 31 17	3316	68 55 10	3298
	SATURN	W.	58 03 09	2859	59 36 20	2852	61 09 41	2842	62 43 14	2835
	Aldebaran	E.	67 09 51	2851	65 36 29	2842	64 02 56	2835	62 29 13	2827
	Pollux	E.	110 14 05	2952	108 42 52	2943	107 11 28	2934	105 39 52	2925
9	α Aquilæ	W.	75 59 31	3220	77 25 16	3206	78 51 18	3193	80 17 36	3180

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.	P. L. of Diff.	XVh	P. L. of Diff.	XVIIIh	P. L. of Diff.	XXIh	P. L. of Diff.
			° ' "		° ' "		° ' "		° ' "	
1	SUN	W.	124 48 01	3444	126 09 28	3446	127 30 53	3448	128 52 15	3449
	Spica	W.	81 02 52	3077	82 31 30	3078	84 00 06	3080	85 28 40	3082
	MARS	W.	57 20 43	3330	58 44 20	3332	60 07 55	3333	61 31 28	3334
	Antares	W.	36 11 07	3226	37 36 45	3218	39 02 33	3209	40 28 31	3203
	JUPITER	E.	66 36 20	3030	65 06 44	3033	63 37 12	3034	62 07 41	3035
	α Arietis	E.	111 34 41	3188	110 08 18	3188	108 41 54	3188	107 15 30	3187
2	Spica	W.	92 51 12	3083	94 19 42	3082	95 48 13	3082	97 16 45	3080
	MARS	W.	68 29 01	3335	69 52 32	3335	71 16 03	3333	72 39 36	3332
	Antares	W.	47 40 07	3176	49 06 45	3170	50 33 30	3165	52 00 21	3161
	JUPITER	E.	54 40 27	3039	53 11 02	3039	51 41 37	3038	50 12 11	3036
	α Arietis	E.	100 03 17	3182	98 36 46	3181	97 10 14	3179	95 43 40	3177
3	Spica	W.	104 39 55	3070	106 08 41	3067	107 37 31	3064	109 06 25	3060
	MARS	W.	79 37 51	3321	81 01 38	3318	82 25 29	3314	83 49 24	3311
	Antares	W.	59 16 02	3136	60 43 28	3130	62 11 01	3125	63 38 40	3119
	JUPITER	E.	42 44 37	3029	41 15 00	3027	39 45 21	3024	38 15 38	3022
	α Arietis	E.	88 30 11	3166	87 03 21	3163	85 36 27	3160	84 09 30	3158
4	Spica	W.	116 32 00	3041	118 01 22	3037	119 30 49	3032	121 00 22	3027
	MARS	W.	90 50 06	3290	92 14 29	3285	93 38 58	3280	95 03 33	3275
	Antares	W.	70 58 30	3093	72 26 48	3087	73 55 13	3081	75 23 46	3075
	JUPITER	E.	30 46 23	3010	29 16 23	3008	27 46 20	3006	26 16 15	3005
	α Arietis	E.	76 53 52	3112	75 26 33	3138	73 59 10	3135	72 31 43	3132
	Aldebaran	E.	109 44 32	3031	108 14 58	3027	106 45 19	3022	105 15 34	3017
5	MARS	W.	102 08 02	3247	103 33 16	3242	104 58 36	3235	106 24 04	3229
	Antares	W.	82 48 19	3045	84 17 36	3039	85 47 00	3033	87 16 32	3026
	α Aquilæ	W.	39 04 18	4181	40 13 02	4102	41 23 02	4029	42 34 13	3964
	SATURN	W.	27 39 58	3056	29 09 02	3042	30 38 23	3030	32 07 59	3018
	α Arietis	E.	65 13 32	3118	63 45 44	3114	62 17 52	3112	60 49 57	3110
	Aldebaran	E.	97 45 08	2989	96 14 42	2984	94 44 09	2977	93 13 28	2970
6	MARS	W.	113 33 14	3197	114 59 27	3190	116 25 48	3183	117 52 17	3176
	Antares	W.	94 46 15	2994	96 16 35	2987	97 47 04	2981	99 17 41	2973
	α Aquilæ	W.	48 44 54	3708	50 01 33	3665	51 18 57	3627	52 37 02	3592
	SATURN	W.	39 39 26	2965	41 10 22	2956	42 41 30	2946	44 12 50	2938
	α Arietis	E.	53 29 52	3104	52 01 47	3105	50 33 44	3105	49 05 41	3107
	Aldebaran	E.	85 37 59	2938	84 06 28	2931	82 34 49	2921	81 03 01	2917
7	Antares	W.	106 52 50	2942	108 24 16	2935	109 55 50	2929	111 27 32	2923
	α Aquilæ	W.	59 16 18	3446	60 37 42	3421	61 59 35	3397	63 21 55	3376
	SATURN	W.	51 52 16	2894	53 24 43	2886	54 57 20	2876	56 30 09	2868
	α Arietis	E.	41 46 18	3130	40 18 45	3140	38 51 24	3151	37 24 16	3163
	Aldebaran	E.	73 21 43	2880	71 48 59	2874	70 16 07	2866	68 43 04	2858
8	α Aquilæ	W.	70 19 24	3281	71 43 58	3265	73 08 50	3248	74 34 02	3234
	SATURN	W.	64 16 57	2825	65 50 52	2818	67 24 57	2809	68 59 13	2800
	Aldebaran	E.	60 55 20	2819	59 21 17	2811	57 47 03	2805	56 12 39	2795
	Pollux	E.	104 08 05	2916	102 36 06	2907	101 03 56	2898	99 31 34	2888
9	α Aquilæ	W.	81 44 09	3168	83 10 56	3158	84 37 56	3146	86 05 10	3135

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Noon.	P. L. of Diff.	IIIh	P. L. of Diff.	VIh	P. L. of Diff.	IXh	P. L. of Diff.
			" ' "		" ' "		" ' "		" ' "	
9	SATURN	W.	70 33 41	2792	72 08 20	2783	73 43 10	2774	75 18 12	2766
	JUPITER	W.	25 15 24	2775	26 50 25	2762	28 25 43	2751	30 01 15	2741
	Aldebaran	E.	54 38 04	2786	53 03 18	2778	51 28 21	2769	49 53 13	2761
	Pollux	E.	97 59 00	2879	96 26 14	2870	94 53 17	2862	93 20 09	2852
10	α Aquilæ	W.	87 32 37	3126	89 00 15	3117	90 28 04	3108	91 56 04	3099
	SATURN	W.	83 16 13	2721	84 52 25	2713	86 28 47	2704	88 05 22	2695
	JUPITER	W.	38 02 24	2689	39 39 19	2680	41 16 26	2669	42 53 48	2659
	Aldebaran	E.	41 54 46	2718	40 18 30	2710	38 42 03	2700	37 05 23	2691
	Pollux	E.	85 31 39	2809	83 57 23	2801	82 22 57	2793	80 48 20	2785
11	α Aquilæ	W.	99 18 28	3065	100 47 20	3060	102 16 19	3056	103 45 23	3052
	SATURN	W.	96 11 22	2648	97 49 12	2639	99 27 14	2629	101 05 30	2620
	JUPITER	W.	51 03 57	2610	52 42 39	2599	54 21 35	2590	56 00 44	2579
	Aldebaran	E.	28 58 59	2645	27 21 05	2635	25 42 58	2626	24 04 38	2616
	Pollux	E.	72 52 34	2745	71 16 54	2737	69 41 03	2729	68 05 02	2722
	SUN	E.	128 00 26	2981	126 29 50	2971	124 59 01	2960	123 27 58	2949
12	SATURN	W.	109 20 04	2571	110 59 39	2561	112 39 28	2551	114 19 31	2541
	JUPITER	W.	64 20 05	2527	66 00 41	2517	67 41 31	2506	69 22 36	2495
	Pollux	E.	60 02 34	2688	58 25 38	2682	56 48 34	2677	55 11 23	2672
	SUN	E.	115 49 14	2894	114 16 47	2882	112 44 05	2870	111 11 08	2859
13	JUPITER	W.	77 51 48	2441	79 34 25	2430	81 17 17	2419	83 00 25	2408
	α Arietis	W.	33 00 20	2833	34 34 05	2794	36 08 41	2756	37 44 06	2722
	Pollux	E.	47 04 01	2657	45 26 23	2656	43 48 44	2657	42 11 06	2659
	SUN	E.	103 22 40	2800	101 48 12	2788	100 13 28	2775	98 38 28	2764
14	JUPITER	W.	91 40 06	2352	93 24 50	2340	95 09 51	2329	96 55 08	2317
	α Arietis	W.	45 51 22	2588	47 30 34	2566	49 10 16	2544	50 50 28	2524
	Aldebaran	W.	11 20 15	2396	13 03 56	2382	14 47 56	2370	16 32 14	2357
	SUN	E.	90 39 30	2703	89 02 54	2690	87 26 01	2678	85 48 52	2666
15	JUPITER	W.	105 45 36	2264	107 32 29	2253	109 19 38	2243	111 07 02	2233
	α Arietis	W.	59 18 02	2436	61 00 45	2421	62 43 50	2405	64 27 17	2391
	Aldebaran	W.	25 18 09	2299	27 04 10	2287	28 50 28	2277	30 37 02	2266
	SUN	E.	77 39 04	2607	76 00 18	2595	74 21 16	2583	72 41 58	2572
16	α Arietis	W.	73 09 23	2328	74 54 42	2316	76 40 18	2306	78 26 09	2296
	Aldebaran	W.	39 33 42	2216	41 21 46	2206	43 10 05	2197	44 58 37	2188
	SUN	E.	64 21 41	2519	62 40 54	2508	60 59 52	2499	59 18 37	2489
17	α Arietis	W.	87 18 52	2253	89 06 01	2247	90 53 19	2241	92 40 46	2235
	Aldebaran	W.	54 04 27	2149	55 54 11	2143	57 44 05	2136	59 34 09	2130
	SUN	E.	50 49 17	2448	49 06 51	2441	47 24 15	2434	45 41 29	2429
18	α Arietis	W.	101 39 45	2218	103 27 45	2216	105 15 48	2216	107 03 51	2217
	Aldebaran	W.	68 46 27	2109	70 37 13	2106	72 28 03	2103	74 18 57	2102
	SUN	E.	37 05 46	2405	35 22 19	2403	33 38 49	2401	31 55 15	2399
19	Aldebaran	W.	83 33 48	2101	85 24 45	2103	87 15 39	2106	89 06 29	2109
	SUN	E.	23 17 08	2400	21 33 33	2403	19 50 03	2407	18 06 38	2411

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.	P. L. of Diff.	XV ^h	P. L. of Diff.	XVIII ^h	P. L. of Diff.	XXI ^h	P. L. of Diff.
			° ' "		° ' "		° ' "		° ' "	
9	SATURN	W.	76 53 25	2756	78 28 50	2749	80 04 25	2739	81 40.13	2730
	JUPITER	W.	31 37 01	2730	33 13 01	2719	34 49 15	2709	36 25 43	2699
	Aldebaran	E.	48 17 54	2753	46 42 24	2744	45 06 43	2735	43 30 50	2727
	Pollux	E.	91 46 49	2844	90 13 18	2835	88 39 36	2827	87 05 43	2818
10	α Aquilæ	W.	93 24 15	3091	94 52 35	3083	96 21 05	3077	97 49 43	3071
	SATURN	W.	89 42 10	2686	91 19 09	2676	92 56 21	2667	94 33 45	2657
	JUPITER	W.	44 31 23	2649	46 09 11	2639	47 47 13	2629	49 25 28	2619
	Aldebaran	E.	35 28 31	2682	33 51 27	2672	32 14 10	2663	30 36 41	2654
	Pollux	E.	79 13 32	2776	77 38 33	2769	76 03 24	2760	74 28 04	2753
11	α Aquilæ	W.	105 14 31	3049	106 43 43	3047	108 12 58	3044	109 42 16	3044
	SATURN	W.	102 43 58	2610	104 22 40	2601	106 01 34	2591	107 40 42	2580
	JUPITER	W.	57 40 08	2569	59 19 46	2559	60 59 38	2548	62 39 44	2538
	Aldebaran	E.	22 26 05	2607	20 47 19	2597	19 08 20	2588	17 29 08	2577
	Pollux	E.	66 28 51	2714	64 52 30	2708	63 16 01	2701	61 39 22	2694
	SUN	E.	121 56 41	2939	120 25 11	2927	118 53 26	2916	117 21 27	2905
12	SATURN	W.	115 59 47	2531	117 40 17	2521	119 21 01	2511	121 01 59	2501
	JUPITER	W.	71 03 56	2485	72 45 31	2474	74 27 21	2462	76 09 27	2452
	Pollux	E.	53 34 05	2667	51 56 41	2663	50 19 12	2660	48 41 38	2657
	SUN	E.	109 37 57	2848	108 04 31	2835	106 30 49	2824	104 56 52	2812
13	JUPITER	W.	84 43 49	2396	86 27 29	2385	88 11 25	2374	89 55 37	2362
	α Arietis	W.	39 20 16	2692	40 57 07	2663	42 34 37	2637	44 12 42	2611
	Pollux	E.	40 33 31	2664	38 56 03	2671	37 18 44	2681	35 41 38	2692
	SUN	E.	97 03 13	2752	95 27 42	2739	93 51 54	2727	92 15 50	2715
14	JUPITER	W.	98 40 42	2307	100 26 31	2296	102 12 37	2285	103 58 59	2274
	α Arietis	W.	52 31 08	2505	54 12 14	2487	55 53 45	2470	57 35 41	2452
	Aldebaran	W.	18 16 50	2344	20 01 45	2333	21 46 56	2322	23 32 24	2310
	SUN	E.	84 11 27	2655	82 33 46	2642	80 55 48	2630	79 17 34	2618
15	JUPITER	W.	112 54 41	2223	114 42 35	2212	116 30 44	2203	118 19 07	2193
	α Arietis	W.	66 11 04	2378	67 55 11	2365	69 39 36	2352	71 24 20	2339
	Aldebaran	W.	32 23 51	2256	34 10 56	2245	35 58 16	2235	37 45 52	2225
	SUN	E.	71 02 24	2561	69 22 35	2551	67 42 32	2540	66 02 14	2529
16	α Arietis	W.	80 12 15	2286	81 58 35	2277	83 45 08	2268	85 31 54	2260
	Aldebaran	W.	46 47 23	2180	48 36 21	2172	50 25 31	2164	52 14 53	2156
	SUN	E.	57 37 09	2481	55 55 29	2472	54 13 36	2464	52 31 32	2456
17	α Arietis	W.	94 28 22	2231	96 16 04	2226	98 03 53	2223	99 51 47	2220
	Aldebaran	W.	61 24 22	2125	63 14 43	2120	65 05 11	2116	66 55 46	2112
	SUN	E.	43 58 35	2423	42 15 33	2418	40 32 24	2413	38 49 08	2409
18	α Arietis	W.	108 51 53	2218	110 39 53	2220	112 27 50	2224	114 15 42	2229
	Aldebaran	W.	76 09 53	2101	78 00 51	2100	79 51 50	2100	81 42 49	2100
	SUN	E.	30 11 39	2398	28 28 01	2398	26 44 23	2398	25 00 45	2398
19	Aldebaran	W.	90 57 15	2113	92 47 55	2116	94 38 30	2121	96 28 57	2128
	SUN	E.	16 23 19	2416	14 40 07	2423	12 57 05	2431	11 14 14	2438

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Noon.	P. L. of Diff.	IIIh	P. L. of Diff.	VIh	P. L. of Diff.	IXh	P. L. of Diff.
			° ' "		° ' "		° ' "		° ' "	
22	SUN	W.	17 30 19	2618	19 08 49	2633	20 46 59	2649	22 24 48	2665
	α Aquilæ	E.	102 18 47	2729	100 42 45	2739	99 06 57	2750	97 31 23	2762
	SATURN	E.	107 07 05	2315	105 21 28	2330	103 36 12	2345	101 51 18	2359
23	SUN	W.	30 28 23	2750	32 03 57	2767	33 39 08	2785	35 13 55	2803
	α Aquilæ	E.	89 37 53	2835	88 04 11	2853	86 30 52	2871	84 57 56	2891
	SATURN	E.	93 12 19	2440	91 29 41	2456	89 47 26	2472	88 05 34	2489
24	SUN	W.	43 01 55	2896	44 34 19	2914	46 06 20	2933	47 37 57	2951
	α Aquilæ	E.	77 19 43	2997	75 49 27	3021	74 19 40	3045	72 50 23	3071
	SATURN	E.	79 42 16	2577	78 02 49	2595	76 23 47	2612	74 45 08	2629
	Fomalhaut	E.	109 08 14	3005	107 38 08	3015	106 08 14	3026	104 38 33	3036
	JUPITER	E.	123 32 46	2533	121 52 19	2551	120 12 16	2567	118 32 36	2584
25	SUN	W.	55 10 16	3043	56 39 36	3060	58 08 34	3078	59 37 11	3095
	α Aquilæ	E.	65 32 03	3209	64 06 04	3241	62 40 43	3271	61 15 58	3304
	SATURN	E.	66 37 49	2716	65 01 31	2734	63 25 36	2750	61 50 03	2767
	Fomalhaut	E.	97 13 42	3100	95 45 32	3114	94 17 39	3128	92 50 03	3143
	JUPITER	E.	110 19 58	2667	108 42 34	2683	107 05 31	2699	105 28 50	2714
26	SUN	W.	66 55 05	3178	68 21 41	3193	69 47 58	3208	71 13 58	3223
	SATURN	E.	53 57 43	2848	52 24 18	2865	50 51 14	2880	49 18 29	2894
	α Aquilæ	E.	54 22 11	3489	53 01 35	3532	51 41 46	3576	50 22 46	3623
	Fomalhaut	E.	85 36 42	3222	84 10 59	3239	82 45 36	3255	81 20 32	3272
	JUPITER	E.	97 30 30	2790	95 55 49	2805	94 21 27	2818	92 47 22	2831
27	SUN	W.	78 19 42	3291	79 44 04	3303	81 08 12	3315	82 32 06	3326
	MARS	W.	19 08 42	3372	20 31 28	3363	21 54 27	3357	23 17 35	3351
	SATURN	E.	41 39 31	2969	40 08 39	2983	38 38 05	2997	37 07 49	3011
	α Aquilæ	E.	44 01 20	3907	42 48 07	3977	41 36 05	4052	40 25 17	4134
	Fomalhaut	E.	74 20 15	3361	72 57 14	3379	71 34 33	3398	70 12 14	3416
	JUPITER	E.	85 01 12	2894	83 28 46	2905	81 56 34	2916	80 24 35	2927
28	SUN	W.	89 28 31	3376	90 51 15	3385	92 13 49	3392	93 36 15	3400
	MARS	W.	30 13 57	3350	31 37 11	3351	33 00 23	3353	34 23 33	3356
	Antares	W.	27 03 26	3278	28 28 03	3263	29 52 58	3248	31 18 10	3236
	Fomalhaut	E.	63 26 09	3518	62 06 05	3539	60 46 24	3564	59 27 10	3588
	JUPITER	E.	72 47 51	2973	71 17 04	2981	69 46 27	2988	68 15 59	2994
	α Arietis	E.	120 53 41	3148	119 26 30	3152	117 59 23	3156	116 32 21	3159
29	SUN	W.	100 26 28	3429	101 48 12	3433	103 09 51	3437	104 31 26	3440
	MARS	W.	41 18 38	3368	42 41 31	3370	44 04 22	3372	45 27 11	3372
	Antares	W.	38 27 01	3199	39 53 11	3194	41 19 27	3190	42 45 48	3186
	Fomalhaut	E.	52 57 50	3723	51 41 27	3755	50 25 38	3790	49 10 25	3826
	JUPITER	E.	60 45 36	3023	59 15 52	3027	57 46 13	3030	56 16 38	3034
	α Arietis	E.	109 18 04	3173	107 51 22	3174	106 24 42	3176	104 58 04	3178
30	SUN	W.	111 18 38	3448	112 40 00	3449	114 01 21	3448	115 22 43	3448
	MARS	W.	52 21 03	3374	53 43 49	3373	55 06 36	3372	56 29 25	3371
	Antares	W.	49 58 40	3168	51 25 27	3165	52 52 18	3161	54 19 14	3157
	JUPITER	E.	48 49 38	3045	47 20 21	3046	45 51 05	3047	44 21 50	3047
	α Arietis	E.	97 45 12	3180	96 18 39	3179	94 52 05	3178	93 25 30	3178

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.	P. L. of Diff.	XVh	P. L. of Diff.	XVIIIh	P. L. of Diff.	XXIh	P. L. of Diff.
			° ' "		° ' "		° ' "		° ' "	
22	SUN	W.	24 02 15	2681	25 39 20	2697	27 16 04	2714	28 52 25	2732
	α Aquilæ	E.	95 56 05	2775	94 21 04	2788	92 46 21	2803	91 11 57	2818
	SATURN	E.	100 06 45	2375	98 22 35	2391	96 38 47	2406	94 55 21	2423
23	SUN	W.	36 48 19	2822	38 22 18	2840	39 55 54	2859	41 29 06	2876
	α Aquilæ	E.	83 25 25	2911	81 53 20	2931	80 21 40	2953	78 50 28	2974
	SATURN	E.	86 24 06	2507	84 43 02	2525	83 02 23	2541	81 22 07	2559
24	SUN	W.	49 09 11	2969	50 40 02	2989	52 10 29	3006	53 40 34	3025
	α Aquilæ	E.	71 21 38	3056	69 53 24	3124	68 25 44	3152	66 58 37	3179
	SATURN	E.	73 06 53	2647	71 29 02	2665	69 51 35	2681	68 14 30	2699
	Fomalhaut	E.	103 09 05	3047	101 39 51	3060	100 10 53	3073	98 42 10	3085
	JUPITER	E.	116 53 19	2601	115 14 25	2618	113 35 54	2634	111 57 45	2650
25	SUN	W.	61 05 27	3113	62 33 21	3129	64 00 55	3145	65 28 10	3162
	α Aquilæ	E.	59 51 51	3338	58 28 23	3373	57 05 36	3411	55 43 32	3449
	SATURN	E.	60 14 52	2784	58 40 03	2801	57 05 36	2816	55 31 29	2832
	Fomalhaut	E.	91 22 46	3158	89 55 47	3174	88 29 07	3189	87 02 45	3205
	JUPITER	E.	103 52 29	2730	102 16 29	2746	100 40 50	2760	99 05 30	2775
26	SUN	W.	72 39 40	3237	74 05 05	3252	75 30 13	3265	76 55 05	3278
	SATURN	E.	47 46 03	2910	46 13 57	2925	44 42 10	2939	43 10 41	2954
	α Aquilæ	E.	49 04 36	3673	47 47 20	3726	46 31 00	3782	45 15 39	3842
	Fomalhaut	E.	79 55 48	3289	78 31 24	3307	77 07 21	3325	75 43 38	3342
	JUPITER	E.	91 13 35	2845	89 40 05	2858	88 06 52	2869	86 33 54	2882
27	SUN	W.	83 55 47	3338	85 19 15	3347	86 42 32	3358	88 05 37	3367
	MARS	W.	24 40 48	3348	26 04 04	3345	27 27 23	3346	28 50 41	3348
	SATURN	E.	35 37 50	3026	34 08 10	3040	32 38 47	3056	31 09 43	3069
	α Aquilæ	E.	39 15 48	4223	38 07 44	4322	37 01 12	4430	35 56 18	4547
	Fomalhaut	E.	68 50 16	3436	67 28 40	3456	66 07 27	3476	64 46 36	3497
	JUPITER	E.	78 52 50	2937	77 21 18	2946	75 49 58	2955	74 18 49	2964
28	SUN	W.	94 58 32	3407	96 20 41	3413	97 42 43	3419	99 04 38	3423
	MARS	W.	35 46 40	3359	37 09 43	3361	38 32 44	3364	39 55 42	3365
	Antares	W.	32 43 36	3226	34 09 14	3218	35 35 02	3211	37 00 58	3205
	Fomalhaut	E.	58 08 23	3612	56 50 02	3637	55 32 08	3665	54 14 44	3693
	JUPITER	E.	66 45 39	3001	65 15 28	3007	63 45 24	3013	62 15 27	3018
	α Arietis	E.	115 05 23	3162	113 38 28	3165	112 11 37	3168	110 44 49	3170
29	SUN	W.	105 52 57	3442	107 14 26	3446	108 35 51	3446	109 57 15	3447
	MARS	W.	46 49 59	3373	48 12 46	3375	49 35 31	3374	50 58 17	3374
	Antares	W.	44 12 14	3183	45 38 44	3179	47 05 18	3175	48 31 57	3172
	Fomalhaut	E.	47 55 50	3864	46 41 54	3908	45 28 42	3953	44 16 16	4002
	JUPITER	E.	54 47 08	3037	53 17 41	3040	51 48 18	3042	50 18 57	3043
	α Arietis	E.	103 31 28	3178	102 04 53	3179	100 38 19	3179	99 11 45	3180
30	SUN	W.	116 44 05	3446	118 05 29	3446	119 26 54	3443	120 48 22	3439
	MARS	W.	57 52 15	3369	59 15 07	3366	60 38 02	3364	62 01 00	3359
	Antares	W.	55 46 15	3153	57 13 21	3149	58 40 31	3144	60 07 47	3139
	JUPITER	E.	42 52 35	3047	41 23 21	3047	39 54 06	3046	38 24 50	3043
	α Arietis	E.	91 58 54	3176	90 32 16	3175	89 05 37	3173	87 38 56	3171

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S						Sidereal Time of Semi-diameter Passing Meridian.	Equation of Time, to be Subtracted from Apparent Time.	Diff. for 1 Hour.
		Apparent Right Ascension.	Diff. for 1 Hour.	Apparent Declination.	Diff. for 1 Hour.	Semi-diameter.				
		h m s	s	° ' "	"	' "	s	m s	s	
Thur.	1	12 26 09.24	+9.042	S. 2 49 38.8	-58.31	16 00.60	64.28	9 59.34	0.812	
Frid.	2	12 29 46.38	9.053	3 12 57.2	58.23	16 00.87	64.32	10 18.70	0.801	
Sat.	3	12 33 23.80	9.065	3 36 13.6	58.13	16 01.16	64.37	10 37.78	0.789	
SUN.	4	12 37 01.52	+9.078	3 59 27.4	-58.02	16 01.44	64.42	10 56.57	0.776	
Mon.	5	12 40 39.56	9.092	4 22 38.4	57.90	16 01.72	64.47	11 15.02	0.762	
Tues.	6	12 44 17.95	9.107	4 45 46.3	57.76	16 01.99	64.52	11 33.14	0.747	
Wed.	7	12 47 56.71	+9.124	5 08 50.6	-57.60	16 02.27	64.58	11 50.87	0.731	
Thur.	8	12 51 35.87	9.141	5 31 51.1	57.43	16 02.54	64.64	12 08.22	0.714	
Frid.	9	12 55 15.44	9.159	5 54 47.4	57.25	16 02.81	64.70	12 25.16	0.696	
Sat.	10	12 58 55.46	+9.178	6 17 39.1	-57.05	16 03.08	64.76	12 41.65	0.677	
SUN.	11	13 02 35.94	9.197	6 40 25.9	56.84	16 03.36	64.83	12 57.67	0.658	
Mon.	12	13 06 16.91	9.218	7 03 07.4	56.61	16 03.63	64.90	13 13.22	0.637	
Tues.	13	13 09 58.39	+9.240	7 25 43.3	-56.37	16 03.90	64.97	13 28.25	0.615	
Wed.	14	13 13 40.39	9.262	7 48 13.2	56.11	16 04.17	65.05	13 42.75	0.593	
Thur.	15	13 17 22.94	9.285	8 10 36.8	55.84	16 04.44	65.13	13 56.72	0.570	
Frid.	16	13 21 06.06	+9.309	8 32 53.5	-55.55	16 04.71	65.21	14 10.12	0.546	
Sat.	17	13 24 49.75	9.333	8 55 03.1	55.24	16 04.97	65.29	14 22.95	0.522	
SUN.	18	13 28 34.04	9.358	9 17 05.1	54.92	16 05.24	65.38	14 35.18	0.497	
Mon.	19	13 32 18.93	+9.384	9 38 59.2	-54.58	16 05.51	65.47	14 46.80	0.471	
Tues.	20	13 36 04.45	9.410	10 00 44.9	54.23	16 05.78	65.56	14 57.80	0.445	
Wed.	21	13 39 50.60	9.436	10 22 21.8	53.85	16 06.05	65.65	15 08.18	0.419	
Thur.	22	13 43 37.38	+9.463	10 43 49.6	-53.46	16 06.32	65.74	15 17.92	0.392	
Frid.	23	13 47 24.83	9.492	11 05 07.7	53.05	16 06.60	65.84	15 27.01	0.364	
Sat.	24	13 51 12.94	9.520	11 26 15.9	52.63	16 06.86	65.94	15 35.42	0.336	
SUN.	25	13 55 01.74	+9.548	11 47 13.6	-52.18	16 07.13	66.04	15 43.16	0.307	
Mon.	26	13 58 51.22	9.578	12 08 00.6	51.72	16 07.40	66.15	15 50.21	0.278	
Tues.	27	14 02 41.41	9.607	12 28 36.2	51.25	16 07.67	66.25	15 56.55	0.249	
Wed.	28	14 06 32.31	+9.637	12 49 00.3	-50.75	16 07.93	66.36	16 02.19	0.219	
Thur.	29	14 10 23.95	9.668	13 09 12.4	50.24	16 08.21	66.47	16 07.09	0.188	
Frid.	30	14 14 16.33	9.699	13 29 12.1	49.72	16 08.47	66.58	16 11.26	0.157	
Sat.	31	14 18 09.46	9.730	13 48 58.9	49.17	16 08.73	66.69	16 14.66	0.126	
SUN.	32	14 22 03.36	+9.763	S. 14 08 32.4	-48.61	16 08.98	66.80	16 17.32	0.093	

NOTE.—The mean time of semidiameter passing the meridian may be found by subtracting 0.18^s from the sidereal time.
The sign — prefixed to the hourly change of declination indicates that south declinations are increasing.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S				Equation of Time, to be Added to Mean Time.	Diff. for 1 Hour.	Sidereal Time, or Right Ascension of Mean Sun.
		Apparent Right Ascension.	Diff. for 1 Hour.	Apparent Declination.	Diff. for 1 Hour.			
		h m s	s	° ' "	"	m s	s	h m s
Thur.	1	12 26 10.75	+9.044	S. 2 49 48.5	-58.32	9 59.47	+0.812	12 36 10.22
Frid.	2	12 29 47.94	9.055	3 13 07.2	58.24	10 18.84	0.801	12 40 06.78
Sat.	3	12 33 25.41	9.067	3 36 23.8	58.14	10 37.92	0.789	12 44 03.33
SUN.	4	12 37 03.17	+9.080	3 59 37.9	-58.03	10 56.71	+0.776	12 47 59.88
Mon.	5	12 40 41.27	9.094	4 22 49.3	57.91	11 15.16	0.764	12 51 56.43
Tues.	6	12 44 19.70	9.109	4 45 57.4	57.77	11 33.28	0.747	12 55 52.98
Wed.	7	12 47 58.52	+9.125	5 09 02.0	-57.61	11 51.01	+0.731	12 59 49.53
Thur.	8	12 51 37.72	9.142	5 32 02.7	57.44	12 08.36	0.714	13 03 46.08
Frid.	9	12 55 17.34	9.160	5 54 59.2	57.26	12 25.30	0.696	13 07 42.64
Sat.	10	12 58 57.40	+9.179	6 17 51.2	-57.06	12 41.79	+0.677	13 11 39.19
SUN.	11	13 02 37.93	9.198	6 40 38.2	56.85	12 57.81	0.658	13 15 35.74
Mon.	12	13 06 18.94	9.219	7 03 19.9	56.62	13 13.36	0.637	13 19 32.30
Tues.	13	13 10 00.46	+9.241	7 25 56.0	-56.38	13 28.39	+0.615	13 23 28.85
Wed.	14	13 13 42.51	9.263	7 48 26.1	56.12	13 42.89	0.593	13 27 25.40
Thur.	15	13 17 25.10	9.286	8 10 49.7	55.85	13 56.85	0.570	13 31 21.95
Frid.	16	13 21 08.25	+9.310	8 33 06.6	-55.56	14 10.25	+0.546	13 35 18.50
Sat.	17	13 24 51.99	9.334	8 55 16.3	55.25	14 23.07	0.522	13 39 15.06
SUN.	18	13 28 36.31	9.359	9 17 18.5	54.92	14 35.30	0.497	13 43 11.61
Mon.	19	13 32 21.24	+9.385	9 39 12.6	-54.58	14 46.92	+0.471	13 47 08.16
Tues.	20	13 36 06.80	9.411	10 00 58.4	54.23	14 57.91	0.445	13 51 04.71
Wed.	21	13 39 52.98	9.437	10 22 35.4	53.85	15 08.29	0.419	13 55 01.27
Thur.	22	13 43 39.80	+9.464	10 44 03.2	-53.46	15 18.02	+0.392	13 58 57.82
Frid.	23	13 47 27.27	9.492	11 05 21.4	53.05	15 27.10	0.364	14 02 54.37
Sat.	24	13 51 15.42	9.520	11 26 29.6	52.63	15 35.51	0.336	14 06 50.93
SUN.	25	13 55 04.24	+9.548	11 47 27.3	-52.18	15 43.24	+0.308	14 10 47.48
Mon.	26	13 58 53.75	9.578	12 08 14.2	51.72	15 50.28	0.278	14 14 44.03
Tues.	27	14 02 43.96	9.607	12 28 49.9	51.25	15 56.62	0.249	14 18 40.58
Wed.	28	14 06 34.89	+9.637	12 49 13.9	-50.75	16 02.25	+0.219	14 22 37.14
Thur.	29	14 10 26.55	9.668	13 09 25.9	50.24	16 07.14	0.188	14 26 33.69
Frid.	30	14 14 18.95	9.699	13 29 25.5	49.72	16 11.30	0.157	14 30 30.25
Sat.	31	14 18 12.10	9.730	13 49 12.2	49.17	16 14.70	0.126	14 34 26.80
SUN.	32	14 22 06.01	+9.763	S. 14 08 45.6	-48.61	16 17.34	+0.093	14 38 23.35

NOTE.—The semidiameter for mean noon may be assumed the same as that for apparent noon.
 The sign — prefixed to the hourly change of declination indicates that south declinations are increasing.

Diff. for 1 Hour.
 +9.8565".
 (Table III.)

AT GREENWICH MEAN NOON.								
Day of the Month.	Day of the Year.	THE SUN'S				Logarithm of the Radius Vector of the Earth.	Diff. for 1 Hour.	Mean Time of Sidereal Noon.
		TRUE LONGITUDE.		Diff. for 1 Hour.	LATITUDE.			
		λ	λ'					
		$^{\circ}$ $'$ $''$	$^{\circ}$ $'$ $''$	$''$	$''$			h m s
1	274	187 08 01.4	7 22.3	+147.52	+ 0.95	0.000 4068	- 52.9	11 21 57.75
2	275	188 07 02.7	6 23.5	147.59	0.87	0.000 2799	52.8	11 18 01.84
3	276	189 06 05.8	5 26.5	147.67	0.76	0.000 1532	52.7	11 14 05.94
4	277	190 05 10.8	4 31.4	+147.75	+ 0.65	0.000 0269	- 52.6	11 10 10.03
5	278	191 04 17.7	3 38.2	147.83	0.53	9.999 9009	52.4	11 06 14.12
6	279	192 03 26.6	2 47.0	147.91	0.39	9.999 7755	52.2	11 02 18.22
7	280	193 02 37.5	1 57.9	+148.00	+ 0.26	9.999 6506	- 51.9	10 58 22.31
8	281	194 01 50.5	1 10.8	148.09	0.14	9.999 5264	51.6	10 54 26.41
9	282	195 01 05.7	0 25.9	148.18	+ 0.04	9.999 4028	51.4	10 50 30.50
10	283	195 60 23.1	59 43.3	+148.27	- 0.04	9.999 2798	- 51.1	10 46 34.59
11	284	196 59 42.8	59 02.8	148.37	0.11	9.999 1574	50.9	10 42 38.69
12	285	197 59 04.8	58 24.7	148.47	0.14	9.999 0354	50.7	10 38 42.78
13	286	198 58 29.1	57 49.0	+148.56	- 0.13	9.998 9139	- 50.6	10 34 46.88
14	287	199 57 55.8	57 15.5	148.66	0.09	9.998 7927	50.5	10 30 50.97
15	288	200 57 24.8	56 44.5	148.76	- 0.02	9.998 6716	50.4	10 26 55.06
16	289	201 56 56.2	56 15.8	+148.85	+ 0.08	9.998 5506	- 50.4	10 22 59.16
17	290	202 56 29.8	55 49.3	148.95	0.21	9.998 4296	50.4	10 19 03.25
18	291	203 56 05.7	55 25.1	149.04	0.34	9.998 3086	50.5	10 15 07.34
19	292	204 55 43.7	55 03.1	+149.13	+ 0.49	9.998 1874	- 50.5	10 11 11.44
20	293	205 55 23.9	54 43.2	149.22	0.63	9.998 0661	50.6	10 07 15.53
21	294	206 55 06.1	54 25.2	149.30	0.76	9.997 9446	50.6	10 03 19.62
22	295	207 54 50.2	54 09.2	+149.38	+ 0.87	9.997 8231	- 50.6	9 59 23.72
23	296	208 54 36.2	53 55.1	149.45	0.96	9.997 7016	50.6	9 55 27.81
24	297	209 54 24.0	53 42.8	149.53	1.02	9.997 5802	50.5	9 51 31.90
25	298	210 54 13.5	53 32.3	+149.60	+ 1.06	9.997 4591	- 50.4	9 47 36.00
26	299	211 54 04.8	53 23.5	149.67	1.07	9.997 3384	50.2	9 43 40.09
27	300	212 53 57.8	53 16.3	149.74	1.05	9.997 2183	49.9	9 39 44.18
28	301	213 53 52.5	53 10.9	+149.81	+ 1.00	9.997 0989	- 49.6	9 35 48.27
29	302	214 53 48.8	53 07.1	149.88	0.93	9.996 9803	49.2	9 31 52.36
30	303	215 53 46.8	53 05.0	149.95	0.83	9.996 8626	48.8	9 27 56.46
31	304	216 53 46.5	53 04.5	150.02	0.72	9.996 7461	48.3	9 24 00.55
32	305	217 53 47.8	53 05.8	+150.09	+ 0.61	9.996 6307	- 47.8	9 20 04.64

NOTE.—The longitudes in the column λ are referred to the true equinox of their own date, while those in the column λ' are referred to the mean equinox of the beginning of the Besselian fictitious year.

Diff. for 1 Hour,
—9.8296".
(Table II.)

GREENWICH MEAN TIME.

Day of the Month.	THE MOON'S								
	SEMIDIAMETER.		HORIZONTAL PARALLAX.				UPPER TRANSIT.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 Hour.	Midnight.	Diff. for 1 Hour.	Meridian of Greenwich.	Diff. for 1 Hour.	Noon.
	° ' "	° ' "	° ' "	"	° ' "	"	h m	m	d
1	14 47.6	14 48.6	54 11.7	+ 0.21	54 15.4	+ 0.39	8 21.6	+ 1.87	10.3
2	14 50.2	14 52.3	54 21.1	0.56	54 28.8	0.71	9 06.0	1.85	11.3
3	14 54.8	14 57.8	54 38.2	0.84	54 49.1	0.96	9 50.2	1.84	12.3
4	15 01.1	15 04.7	55 01.2	+ 1.06	55 14.5	+ 1.14	10 34.5	+ 1.86	13.3
5	15 08.5	15 12.6	55 28.5	1.20	55 43.2	1.24	11 19.4	1.89	14.3
6	15 16.7	15 20.8	55 58.3	1.27	56 13.6	1.28	12 05.5	1.95	15.3
7	15 25.0	15 29.2	56 29.0	+ 1.27	56 44.2	+ 1.26	12 53.3	+ 2.04	16.3
8	15 33.3	15 37.2	56 59.2	1.23	57 13.8	1.20	13 43.2	2.13	17.3
9	15 41.1	15 44.9	57 28.1	1.16	57 41.8	1.12	14 35.5	2.22	18.3
10	15 48.5	15 51.9	57 55.0	+ 1.08	58 07.7	+ 1.03	15 29.8	+ 2.30	19.3
11	15 55.2	15 58.4	58 19.9	0.98	58 31.4	0.93	16 25.7	2.35	20.3
12	16 01.4	16 04.2	58 42.3	0.88	58 52.6	0.82	17 22.5	2.37	21.3
13	16 06.7	16 09.1	59 02.0	+ 0.75	59 10.6	+ 0.67	18 19.3	+ 2.35	22.3
14	16 11.1	16 12.9	59 18.2	0.58	59 24.5	0.47	19 15.2	2.31	23.3
15	16 14.2	16 15.1	59 29.5	0.35	59 32.8	+ 0.20	20 10.0	2.26	24.3
16	16 15.5	16 15.4	59 34.4	+ 0.04	59 33.9	- 0.13	21 03.6	+ 2.21	25.3
17	16 14.7	16 13.3	59 31.3	- 0.32	59 26.3	0.52	21 56.1	2.17	26.3
18	16 11.3	16 08.6	59 18.8	0.72	59 09.0	0.91	22 48.0	2.15	27.3
19	16 05.3	16 01.3	58 56.8	- 1.11	58 42.3	- 1.29	23 39.6	+ 2.15	28.3
20	15 56.9	15 51.9	58 25.8	1.45	58 07.6	1.58	0		29.3
21	15 46.5	15 40.9	57 47.9	1.68	57 27.2	1.75	0 31.1	2.15	0.5
22	15 35.1	15 29.2	57 05.9	- 1.78	56 44.4	- 1.78	1 22.6	+ 2.14	1.5
23	15 23.4	15 17.8	56 23.1	1.75	56 02.3	1.68	2 13.9	2.13	2.5
24	15 12.4	15 07.4	55 42.6	1.58	55 24.3	1.46	3 04.6	2.09	3.5
25	15 02.8	14 58.8	55 07.6	- 1.31	54 52.8	- 1.14	3 54.3	+ 2.04	4.5
26	14 55.4	14 52.6	54 40.2	0.95	54 29.9	0.75	4 42.8	1.99	5.5
27	14 50.4	14 49.0	54 22.1	0.54	54 16.8	- 0.33	5 29.8	1.93	6.5
28	14 48.3	14 48.3	54 14.2	- 0.11	54 14.2	+ 0.11	6 15.5	+ 1.88	7.5
29	14 49.0	14 50.4	54 16.8	+ 0.33	54 22.1	0.53	7 00.1	1.84	8.5
30	14 52.5	14 55.2	54 29.7	0.73	54 39.7	0.92	7 44.1	1.83	9.5
31	14 58.5	15 02.4	54 51.9	1.09	55 06.0	1.25	8 28.0	1.84	10.5
32	15 06.7	15 11.4	55 21.8	+ 1.37	55 38.9	+ 1.48	9 12.4	+ 1.88	11.5

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
THURSDAY 1.					SATURDAY 3.				
0	20 42 30.13	+ 1.9863	S. 13 36 17.6	+ 6.270	0	22 16 42.81	+ 1.9488	S. 7 33 59.7	+ 8.644
1	20 44 29.27	1.9850	13 29 59.6	6.330	1	22 18 39.73	1.9487	7 25 19.9	8.682
2	20 46 28.33	1.9837	13 23 38.0	6.390	2	22 20 36.65	1.9486	7 16 37.9	8.718
3	20 48 27.31	1.9824	13 17 12.8	6.450	3	22 22 33.56	1.9485	7 07 53.7	8.755
4	20 50 26.22	1.9812	13 10 44.0	6.508	4	22 24 30.47	1.9485	6 59 07.3	8.791
5	20 52 25.05	1.9799	13 04 11.8	6.567	5	22 26 27.38	1.9485	6 50 18.8	8.826
6	20 54 23.81	1.9787	12 57 36.0	6.625	6	22 28 24.29	1.9486	6 41 28.2	8.860
7	20 56 22.49	1.9774	12 50 56.8	6.682	7	22 30 21.21	1.9487	6 32 35.6	8.894
8	20 58 21.10	1.9763	12 44 14.2	6.739	8	22 32 18.13	1.9487	6 23 40.9	8.928
9	21 00 19.65	1.9752	12 37 28.1	6.796	9	22 34 15.05	1.9488	6 14 44.2	8.961
10	21 02 18.12	1.9739	12 30 38.7	6.852	10	22 36 11.99	1.9491	6 05 45.6	8.993
11	21 04 16.52	1.9728	12 23 45.9	6.908	11	22 38 08.94	1.9493	5 56 45.1	9.025
12	21 06 14.86	1.9717	12 16 49.7	6.964	12	22 40 05.90	1.9494	5 47 42.6	9.057
13	21 08 13.13	1.9707	12 09 50.2	7.018	13	22 42 02.87	1.9497	5 38 38.3	9.088
14	21 10 11.34	1.9697	12 02 47.5	7.073	14	22 43 59.86	1.9500	5 29 32.1	9.118
15	21 12 09.49	1.9686	11 55 41.5	7.128	15	22 45 56.87	1.9504	5 20 24.2	9.147
16	21 14 07.57	1.9676	11 48 32.2	7.181	16	22 47 53.91	1.9508	5 11 14.5	9.176
17	21 16 05.60	1.9666	11 41 19.8	7.233	17	22 49 50.96	1.9511	5 02 03.1	9.204
18	21 18 03.56	1.9656	11 34 04.2	7.287	18	22 51 48.04	1.9515	4 52 50.0	9.232
19	21 20 01.47	1.9647	11 26 45.4	7.339	19	22 53 45.14	1.9520	4 43 35.3	9.259
20	21 21 59.33	1.9638	11 19 23.5	7.391	20	22 55 42.28	1.9525	4 34 18.9	9.286
21	21 23 57.12	1.9628	11 11 58.5	7.442	21	22 57 39.44	1.9530	4 25 01.0	9.312
22	21 25 54.87	1.9620	11 04 30.5	7.493	22	22 59 36.64	1.9536	4 15 41.5	9.337
23	21 27 52.56	+ 1.9611	S. 10 56 59.4	+ 7.543	23	23 01 33.87	+ 1.9542	S. 4 06 20.6	+ 9.361
FRIDAY 2.					SUNDAY 4.				
0	21 29 50.20	+ 1.9603	S. 10 49 25.3	+ 7.593	0	23 03 31.14	+ 1.9548	S. 3 56 58.2	+ 9.385
1	21 31 47.79	1.9595	10 41 48.2	7.643	1	23 05 28.45	1.9555	3 47 34.4	9.409
2	21 33 45.34	1.9588	10 34 08.2	7.692	2	23 07 25.80	1.9562	3 38 09.1	9.433
3	21 35 42.84	1.9580	10 26 25.2	7.741	3	23 09 23.19	1.9568	3 28 42.5	9.455
4	21 37 40.30	1.9573	10 18 39.3	7.788	4	23 11 20.62	1.9576	3 19 14.5	9.477
5	21 39 37.72	1.9567	10 10 50.6	7.835	5	23 13 18.10	1.9584	3 09 45.3	9.498
6	21 41 35.10	1.9559	10 02 59.1	7.883	6	23 15 15.63	1.9593	3 00 14.8	9.518
7	21 43 32.43	1.9552	9 55 04.7	7.929	7	23 17 13.22	1.9602	2 50 43.1	9.538
8	21 45 29.73	1.9547	9 47 07.6	7.975	8	23 19 10.86	1.9611	2 41 10.3	9.557
9	21 47 27.00	1.9542	9 39 07.7	8.021	9	23 21 08.55	1.9620	2 31 36.3	9.576
10	21 49 24.23	1.9535	9 31 05.1	8.066	10	23 23 06.30	1.9630	2 22 01.2	9.593
11	21 51 21.42	1.9530	9 22 59.8	8.111	11	23 25 04.11	1.9640	2 12 25.1	9.610
12	21 53 18.59	1.9526	9 14 51.8	8.155	12	23 27 01.98	1.9650	2 02 48.0	9.627
13	21 55 15.73	1.9521	9 06 41.2	8.198	13	23 28 59.91	1.9661	1 53 09.9	9.643
14	21 57 12.84	1.9516	8 58 28.0	8.242	14	23 30 57.91	1.9673	1 43 30.9	9.658
15	21 59 09.92	1.9512	8 50 12.2	8.284	15	23 32 55.98	1.9684	1 33 51.0	9.673
16	22 01 06.98	1.9508	8 41 53.9	8.326	16	23 34 54.12	1.9696	1 24 10.2	9.687
17	22 03 04.02	1.9505	8 33 33.1	8.368	17	23 36 52.33	1.9708	1 14 28.6	9.699
18	22 05 01.04	1.9502	8 25 09.8	8.408	18	23 38 50.62	1.9721	1 04 46.3	9.712
19	22 06 58.04	1.9498	8 16 44.1	8.449	19	23 40 48.98	1.9733	0 55 03.2	9.723
20	22 08 55.02	1.9496	8 08 15.9	8.490	20	23 42 47.42	1.9747	0 45 19.5	9.734
21	22 10 51.99	1.9493	7 59 45.3	8.529	21	23 44 45.94	1.9760	0 35 35.1	9.745
22	22 12 48.94	1.9491	7 51 12.4	8.568	22	23 46 44.54	1.9774	0 25 50.1	9.755
23	22 14 45.88	1.9489	7 42 37.2	8.606	23	23 48 43.23	1.9788	0 16 04.5	9.764
24	22 16 42.81	+ 1.9488	S. 7 33 59.7	+ 8.644	24	23 50 42.00	+ 1.9803	S. 0 06 18.4	+ 9.773

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
MONDAY 5.					WEDNESDAY 7.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
0	23 50 42.00	+ 1.9803	S. 0 06 18.4	+ 9.773	0	1 28 05.50	+ 2.0902	N. 7 37 50.3	+ 9.256
1	23 52 40.86	1.9818	N. 0 03 28.2	9.780	1	1 30 11.00	2.0932	7 47 04.7	9.225
2	23 54 39.81	1.9833	0 13 15.2	9.787	2	1 32 16.68	2.0963	7 56 17.3	9.193
3	23 56 38.86	1.9849	0 23 02.6	9.793	3	1 34 22.55	2.0993	8 05 27.9	9.159
4	23 58 38.00	1.9865	0 32 50.3	9.798	4	1 36 28.60	2.1024	8 14 36.4	9.125
5	0 00 37.24	1.9882	0 42 38.3	9.803	5	1 38 34.84	2.1055	8 23 42.9	9.091
6	0 02 36.58	1.9898	0 52 26.6	9.807	6	1 40 41.26	2.1087	8 32 47.3	9.055
7	0 04 36.02	1.9916	1 02 15.1	9.810	7	1 42 47.88	2.1119	8 41 49.5	9.018
8	0 06 35.57	1.9933	1 12 03.8	9.813	8	1 44 54.69	2.1151	8 50 49.5	8.981
9	0 08 35.22	1.9950	1 21 52.6	9.814	9	1 47 01.69	2.1183	8 59 47.2	8.942
10	0 10 34.97	1.9968	1 31 41.5	9.815	10	1 49 08.89	2.1216	9 08 42.5	8.903
11	0 12 34.84	1.9987	1 41 30.4	9.814	11	1 51 16.28	2.1248	9 17 35.5	8.863
12	0 14 34.82	2.0006	1 51 19.2	9.813	12	1 53 23.87	2.1282	9 26 26.0	8.821
13	0 16 34.91	2.0025	2 01 08.0	9.812	13	1 55 31.66	2.1314	9 35 14.0	8.778
14	0 18 35.12	2.0045	2 10 56.7	9.811	14	1 57 39.64	2.1348	9 43 59.4	8.736
15	0 20 35.45	2.0065	2 20 45.3	9.808	15	1 59 47.83	2.1381	9 52 42.3	8.692
16	0 22 35.90	2.0085	2 30 33.7	9.805	16	2 01 56.21	2.1414	10 01 22.5	8.647
17	0 24 36.47	2.0106	2 40 21.9	9.800	17	2 04 04.80	2.1448	10 09 59.9	8.600
18	0 26 37.17	2.0127	2 50 09.7	9.794	18	2 06 13.59	2.1482	10 18 34.5	8.553
19	0 28 37.99	2.0147	2 59 57.2	9.789	19	2 08 22.59	2.1517	10 27 06.3	8.506
20	0 30 38.93	2.0168	3 09 44.4	9.783	20	2 10 31.79	2.1551	10 35 35.2	8.458
21	0 32 40.01	2.0191	3 19 31.1	9.775	21	2 12 41.20	2.1586	10 44 01.2	8.408
22	0 34 41.22	2.0213	3 29 17.4	9.767	22	2 14 50.82	2.1621	10 52 24.2	8.357
23	0 36 42.57	+ 2.0236	N. 3 39 03.1	+ 9.758	23	2 17 00.65	+ 2.1655	N. 11 00 44.1	+ 8.305
TUESDAY 6.					THURSDAY 8.				
0	0 38 44.05	+ 2.0258	N. 3 48 48.3	+ 9.748	0	2 19 10.68	+ 2.1689	N. 11 09 00.8	+ 8.253
1	0 40 45.67	2.0282	3 58 32.8	9.737	1	2 21 20.92	2.1725	11 17 14.4	8.200
2	0 42 47.43	2.0305	4 08 16.7	9.725	2	2 23 31.38	2.1760	11 25 24.8	8.146
3	0 44 49.33	2.0329	4 17 59.8	9.713	3	2 25 42.04	2.1795	11 33 31.9	8.090
4	0 46 51.38	2.0354	4 27 42.2	9.700	4	2 27 52.92	2.1831	11 41 35.6	8.034
5	0 48 53.58	2.0378	4 37 23.8	9.686	5	2 30 04.01	2.1866	11 49 36.0	7.977
6	0 50 55.92	2.0403	4 47 04.5	9.671	6	2 32 15.31	2.1902	11 57 32.9	7.919
7	0 52 58.41	2.0428	4 56 44.3	9.655	7	2 34 26.83	2.1938	12 05 26.3	7.860
8	0 55 01.06	2.0453	5 06 23.1	9.638	8	2 36 38.56	2.1973	12 13 16.1	7.800
9	0 57 03.85	2.0479	5 16 00.9	9.621	9	2 38 50.51	2.2009	12 21 02.3	7.740
10	0 59 06.81	2.0506	5 25 37.6	9.603	10	2 41 02.67	2.2045	12 28 44.9	7.678
11	1 01 09.92	2.0532	5 35 13.2	9.583	11	2 43 15.05	2.2081	12 36 23.7	7.615
12	1 03 13.19	2.0558	5 44 47.5	9.563	12	2 45 27.64	2.2117	12 43 58.7	7.552
13	1 05 16.62	2.0586	5 54 20.7	9.543	13	2 47 40.45	2.2153	12 51 29.9	7.488
14	1 07 20.22	2.0613	6 03 52.6	9.521	14	2 49 53.47	2.2188	12 58 57.2	7.423
15	1 09 23.98	2.0640	6 13 23.2	9.498	15	2 52 06.71	2.2225	13 06 20.6	7.356
16	1 11 27.90	2.0668	6 22 52.4	9.475	16	2 54 20.17	2.2261	13 13 39.9	7.288
17	1 13 31.99	2.0697	6 32 20.2	9.451	17	2 56 33.84	2.2297	13 20 55.2	7.221
18	1 15 36.26	2.0725	6 41 46.5	9.426	18	2 58 47.73	2.2333	13 28 06.4	7.153
19	1 17 40.69	2.0753	6 51 11.3	9.400	19	3 01 01.84	2.2369	13 35 13.5	7.083
20	1 19 45.30	2.0782	7 00 34.5	9.373	20	3 03 16.16	2.2405	13 42 16.3	7.011
21	1 21 50.08	2.0812	7 09 56.0	9.345	21	3 05 30.70	2.2441	13 49 14.8	6.939
22	1 23 55.04	2.0842	7 19 15.9	9.317	22	3 07 45.45	2.2477	13 56 09.0	6.867
23	1 26 00.18	2.0872	7 28 34.0	9.287	23	3 10 00.42	2.2513	14 02 58.8	6.793
24	1 28 05.50	+ 2.0902	N. 7 37 50.3	+ 9.256	24	3 12 15.60	+ 2.2548	N. 14 09 44.1	+ 6.718

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
FRIDAY 9.					SUNDAY 11.				
0	h m s		N. 14 09 44.1	+ 6.718	0	h m s		N. 17 50 59.8	+ 2.223
1	3 12 15.60	+ 2.2548	14 16 25.0	6.643	1	5 04 17.24	+ 2.4017	17 53 09.9	2.114
2	3 14 31.00	2.2584	14 23 01.3	6.567	2	5 06 41.41	2.4039	17 55 13.5	2.005
3	3 16 46.61	2.2620	14 29 33.0	6.490	3	5 09 05.71	2.4061	17 57 10.5	1.895
4	3 19 02.44	2.2656	14 36 00.1	6.413	4	5 11 30.14	2.4082	17 59 00.9	1.784
5	3 21 18.48	2.2691	14 42 22.5	6.334	5	5 13 54.69	2.4102	18 00 44.6	1.673
6	3 23 34.73	2.2727	14 48 40.2	6.254	6	5 16 19.36	2.4121	18 02 21.7	1.563
7	3 25 51.20	2.2763	14 54 53.0	6.173	7	5 18 44.14	2.4140	18 03 52.1	1.450
8	3 28 07.88	2.2797	15 01 01.0	6.092	8	5 21 09.04	2.4159	18 05 15.7	1.338
9	3 30 24.76	2.2832	15 07 04.0	6.009	9	5 23 34.05	2.4177	18 06 32.6	1.226
10	3 32 41.86	2.2867	15 13 02.1	5.927	10	5 25 59.16	2.4194	18 07 42.8	1.113
11	3 34 59.17	2.2902	15 18 55.2	5.843	11	5 28 24.38	2.4212	18 08 46.2	1.000
12	3 37 16.68	2.2936	15 24 43.3	5.758	12	5 30 49.70	2.4228	18 09 42.8	0.887
13	3 39 34.40	2.2971	15 30 26.2	5.673	13	5 33 15.12	2.4244	18 10 32.6	0.773
14	3 41 52.33	2.3005	15 36 04.0	5.587	14	5 35 40.63	2.4259	18 11 15.6	0.659
15	3 44 10.46	2.3038	15 41 36.6	5.499	15	5 38 06.23	2.4274	18 11 51.7	0.545
16	3 46 28.79	2.3072	15 47 03.9	5.411	16	5 40 31.92	2.4288	18 12 21.0	0.431
17	3 48 47.33	2.3107	15 52 25.9	5.322	17	5 42 57.69	2.4302	18 12 43.4	0.316
18	3 51 06.07	2.3140	15 57 42.5	5.233	18	5 45 23.54	2.4315	18 12 58.9	0.202
19	3 53 25.01	2.3173	16 02 53.8	5.143	19	5 47 49.47	2.4328	18 13 07.6	+ 0.087
20	3 55 44.15	2.3206	16 07 59.6	5.051	20	5 50 15.48	2.4340	18 13 09.3	- 0.028
21	3 58 03.48	2.3238	16 12 59.9	4.959	21	5 52 41.55	2.4351	18 13 04.2	0.143
22	4 00 23.01	2.3272	16 17 54.7	4.867	22	5 55 07.69	2.4363	18 12 52.1	0.260
23	4 02 42.74	2.3304	N. 16 22 43.9	+ 4.773	23	5 57 33.90	2.4373	N. 18 12 33.0	- 0.375
24	4 05 02.66	+ 2.3335				6 00 00.16	+ 2.4383		
SATURDAY 10.					MONDAY 12.				
0	4 07 22.76	+ 2.3367	N. 16 27 27.5	+ 4.679	0	6 02 26.49	+ 2.4392	N. 18 12 07.1	- 0.490
1	4 09 43.06	2.3398	16 32 05.4	4.584	1	6 04 52.87	2.4400	18 11 34.2	0.607
2	4 12 03.54	2.3429	16 36 37.6	4.489	2	6 07 19.29	2.4408	18 10 54.3	0.723
3	4 14 24.21	2.3460	16 41 04.1	4.393	3	6 09 45.76	2.4416	18 10 07.5	0.838
4	4 16 45.06	2.3491	16 45 24.7	4.295	4	6 12 12.28	2.4422	18 09 13.7	0.954
5	4 19 06.10	2.3521	16 49 39.5	4.197	5	6 14 38.83	2.4428	18 08 13.0	1.070
6	4 21 27.31	2.3550	16 53 48.4	4.099	6	6 17 05.42	2.4435	18 07 05.3	1.187
7	4 23 48.70	2.3580	16 57 51.4	4.001	7	6 19 32.05	2.4440	18 05 50.6	1.303
8	4 26 10.27	2.3609	17 01 48.5	3.901	8	6 21 58.70	2.4443	18 04 29.0	1.418
9	4 28 32.01	2.3638	17 05 39.5	3.800	9	6 24 25.37	2.4447	18 03 00.4	1.534
10	4 30 53.92	2.3666	17 09 24.5	3.699	10	6 26 52.07	2.4452	18 01 24.9	1.650
11	4 33 16.00	2.3694	17 13 03.4	3.598	11	6 29 18.79	2.4454	17 59 42.4	1.766
12	4 35 38.25	2.3722	17 16 36.2	3.496	12	6 31 45.52	2.4456	17 57 53.0	1.882
13	4 38 00.66	2.3748	17 20 02.9	3.392	13	6 34 12.26	2.4458	17 55 56.6	1.998
14	4 40 23.23	2.3775	17 23 23.3	3.288	14	6 36 39.02	2.4459	17 53 53.3	2.113
15	4 42 45.96	2.3802	17 26 37.5	3.185	15	6 39 05.77	2.4459	17 51 43.1	2.228
16	4 45 08.85	2.3828	17 29 45.5	3.081	16	6 41 32.53	2.4460	17 49 26.0	2.343
17	4 47 31.89	2.3853	17 32 47.2	2.975	17	6 43 59.29	2.4460	17 47 01.9	2.458
18	4 49 55.08	2.3878	17 35 42.5	2.869	18	6 46 26.05	2.4458	17 44 31.0	2.573
19	4 52 18.42	2.3902	17 38 31.5	2.763	19	6 48 52.79	2.4457	17 41 53.2	2.688
20	4 54 41.90	2.3926	17 41 14.1	2.657	20	6 51 19.53	2.4455	17 39 08.5	2.803
21	4 57 05.53	2.3950	17 43 50.3	2.549	21	6 53 46.25	2.4453	17 36 16.9	2.917
22	4 59 29.30	2.3973	17 46 20.0	2.441	22	6 56 12.96	2.4449	17 33 18.5	3.030
23	5 01 53.20	2.3995	17 48 43.2	2.332	23	6 58 39.64	2.4445	17 30 13.3	3.143
24	5 04 17.24	+ 2.4017	N. 17 50 59.8	+ 2.223	24	7 01 06.30	+ 2.4441	N. 17 27 01.3	- 3.257

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
TUESDAY 13.					THURSDAY 15.				
0	7 01 06.30	+ 2.4441	N. 17 27 01.3	- 3.257	0	8 57 08.22	+ 2.3783	N. 12 49 13.5	- 8.067
1	7 03 32.93	2.4437	17 23 42.5	3.370	1	8 59 30.86	2.3764	12 41 07.0	8.148
2	7 05 59.54	2.4432	17 20 16.9	3.483	2	9 01 53.39	2.3745	12 32 55.7	8.229
3	7 08 26.11	2.4426	17 16 44.6	3.595	3	9 04 15.80	2.3725	12 24 39.5	8.309
4	7 10 52.65	2.4419	17 13 05.5	3.708	4	9 06 38.09	2.3705	12 16 18.6	8.388
5	7 13 19.14	2.4413	17 09 19.7	3.819	5	9 09 00.26	2.3685	12 07 52.9	8.466
6	7 15 45.60	2.4406	17 05 27.2	3.930	6	9 11 22.31	2.3665	11 59 22.7	8.543
7	7 18 12.01	2.4398	17 01 28.1	4.041	7	9 13 44.24	2.3645	11 50 47.8	8.619
8	7 20 38.38	2.4390	16 57 22.3	4.152	8	9 16 06.05	2.3626	11 42 08.4	8.693
9	7 23 04.69	2.4381	16 53 09.9	4.262	9	9 18 27.75	2.3606	11 33 24.6	8.768
10	7 25 30.95	2.4372	16 48 50.9	4.371	10	9 20 49.32	2.3585	11 24 36.3	8.841
11	7 27 57.16	2.4363	16 44 25.4	4.480	11	9 23 10.77	2.3566	11 15 43.7	8.912
12	7 30 23.30	2.4353	16 39 53.3	4.589	12	9 25 32.11	2.3547	11 06 46.9	8.983
13	7 32 49.39	2.4343	16 35 14.7	4.698	13	9 27 53.33	2.3526	10 57 45.8	9.053
14	7 35 15.41	2.4332	16 30 29.6	4.805	14	9 30 14.42	2.3506	10 48 40.6	9.121
15	7 37 41.37	2.4322	16 25 38.1	4.912	15	9 32 35.40	2.3486	10 39 31.3	9.189
16	7 40 07.27	2.4310	16 20 40.2	5.018	16	9 34 56.25	2.3466	10 30 17.9	9.256
17	7 42 33.09	2.4298	16 15 35.9	5.124	17	9 37 16.99	2.3447	10 21 00.6	9.321
18	7 44 58.84	2.4285	16 10 25.3	5.230	18	9 39 37.61	2.3427	10 11 39.4	9.386
19	7 47 24.51	2.4272	16 05 08.3	5.335	19	9 41 58.11	2.3407	10 02 14.3	9.449
20	7 49 50.11	2.4259	15 59 45.1	5.439	20	9 44 18.49	2.3388	9 52 45.5	9.512
21	7 52 15.62	2.4246	15 54 15.6	5.543	21	9 46 38.76	2.3368	9 43 12.9	9.573
22	7 54 41.06	2.4233	15 48 39.9	5.647	22	9 48 58.91	2.3348	9 33 36.7	9.633
23	7 57 06.41	+ 2.4218	N. 15 42 58.0	- 5.748	23	9 51 18.94	+ 2.3328	N. 9 23 56.9	- 9.692
WEDNESDAY 14.					FRIDAY 16.				
0	7 59 31.67	+ 2.4203	N. 15 37 10.1	- 5.850	0	9 53 38.85	+ 2.3309	N. 9 14 13.7	- 9.749
1	8 01 56.85	2.4189	15 31 16.0	5.952	1	9 55 58.65	2.3291	9 04 27.0	9.807
2	8 04 21.94	2.4174	15 25 15.9	6.052	2	9 58 18.34	2.3272	8 54 36.9	9.863
3	8 06 46.94	2.4159	15 19 09.8	6.152	3	10 00 37.91	2.3252	8 44 43.5	9.918
4	8 09 11.85	2.4144	15 12 57.7	6.251	4	10 02 57.36	2.3233	8 34 46.8	9.971
5	8 11 36.67	2.4128	15 06 39.7	6.349	5	10 05 16.71	2.3215	8 24 47.0	10.023
6	8 14 01.38	2.4111	15 00 15.8	6.447	6	10 07 35.94	2.3196	8 14 44.1	10.074
7	8 16 26.00	2.4095	14 53 46.0	6.544	7	10 09 55.06	2.3178	8 04 38.1	10.124
8	8 18 50.52	2.4078	14 47 10.5	6.639	8	10 12 14.07	2.3159	7 54 29.2	10.173
9	8 21 14.94	2.4061	14 40 29.3	6.735	9	10 14 32.97	2.3142	7 44 17.4	10.220
10	8 23 39.25	2.4043	14 33 42.3	6.831	10	10 16 51.77	2.3123	7 34 02.8	10.267
11	8 26 03.46	2.4026	14 26 49.6	6.924	11	10 19 10.45	2.3104	7 23 45.4	10.313
12	8 28 27.56	2.4008	14 19 51.4	7.017	12	10 21 29.02	2.3087	7 13 25.3	10.357
13	8 30 51.56	2.3991	14 12 47.6	7.109	13	10 23 47.49	2.3070	7 03 02.6	10.400
14	8 33 15.45	2.3973	14 05 38.3	7.200	14	10 26 05.86	2.3053	6 52 37.3	10.442
15	8 35 39.24	2.3955	13 58 23.6	7.291	15	10 28 24.13	2.3036	6 42 09.6	10.482
16	8 38 02.91	2.3936	13 51 03.4	7.381	16	10 30 42.29	2.3018	6 31 39.5	10.522
17	8 40 26.47	2.3918	13 43 37.9	7.470	17	10 33 00.35	2.3002	6 21 07.0	10.560
18	8 42 49.92	2.3899	13 36 07.0	7.558	18	10 35 18.32	2.2986	6 10 32.3	10.598
19	8 45 13.26	2.3880	13 28 30.9	7.645	19	10 37 36.18	2.2969	5 59 55.3	10.633
20	8 47 36.48	2.3861	13 20 49.6	7.731	20	10 39 53.95	2.2953	5 49 16.3	10.668
21	8 49 59.59	2.3842	13 13 03.2	7.817	21	10 42 11.61	2.2937	5 38 35.2	10.702
22	8 52 22.58	2.3823	13 05 11.6	7.902	22	10 44 29.19	2.2922	5 27 52.1	10.734
23	8 54 45.46	2.3803	12 57 15.0	7.984	23	10 46 46.67	2.2905	5 17 07.1	10.766
24	8 57 08.22	+ 2.3783	N. 12 49 13.5	- 8.067	24	10 49 04.05	+ 2.2890	N. 5 06 20.2	- 10.796

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
SATURDAY 17.					MONDAY 19.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
0	10 49 04.05	+ 2.2890	N. 5 06 20.2	-10.796	0	12 37 37.12	+ 2.2430	S. 3 43 26.4	-10.820
1	10 51 21.35	2.2875	4 55 31.6	10.824	1	12 39 51.69	2.2427	3 54 14.8	10.792
2	10 53 38.55	2.2860	4 44 41.3	10.852	2	12 42 06.24	2.2422	4 05 01.5	10.763
3	10 55 55.67	2.2846	4 33 49.4	10.878	3	12 44 20.76	2.2418	4 15 46.4	10.733
4	10 58 12.70	2.2831	4 22 56.0	10.903	4	12 46 35.26	2.2416	4 26 29.5	10.702
5	11 00 29.64	2.2817	4 12 01.1	10.927	5	12 48 49.75	2.2412	4 37 10.6	10.668
6	11 02 46.50	2.2803	4 01 04.8	10.950	6	12 51 04.21	2.2408	4 47 49.7	10.635
7	11 05 03.27	2.2789	3 50 07.1	10.972	7	12 53 18.65	2.2406	4 58 26.8	10.601
8	11 07 19.97	2.2776	3 39 08.2	10.992	8	12 55 33.08	2.2403	5 09 01.8	10.565
9	11 09 36.58	2.2762	3 28 08.1	11.011	9	12 57 47.49	2.2401	5 19 34.6	10.528
10	11 11 53.11	2.2749	3 17 06.9	11.028	10	13 00 01.89	2.2398	5 30 05.1	10.489
11	11 14 09.57	2.2737	3 06 04.7	11.045	11	13 02 16.27	2.2396	5 40 33.3	10.451
12	11 16 25.95	2.2723	2 55 01.5	11.061	12	13 04 30.64	2.2394	5 50 59.2	10.411
13	11 18 42.25	2.2712	2 43 57.4	11.075	13	13 06 45.00	2.2392	6 01 22.6	10.370
14	11 20 58.49	2.2700	2 32 52.5	11.088	14	13 08 59.34	2.2389	6 11 43.6	10.328
15	11 23 14.65	2.2688	2 21 46.9	11.099	15	13 11 13.67	2.2388	6 22 02.0	10.284
16	11 25 30.74	2.2676	2 10 40.6	11.110	16	13 13 28.00	2.2387	6 32 17.7	10.240
17	11 27 46.76	2.2664	1 59 33.7	11.119	17	13 15 42.31	2.2385	6 42 30.8	10.196
18	11 30 02.71	2.2653	1 48 26.3	11.128	18	13 17 56.62	2.2384	6 52 41.2	10.149
19	11 32 18.60	2.2643	1 37 18.4	11.135	19	13 20 10.92	2.2383	7 02 48.7	10.102
20	11 34 34.42	2.2632	1 26 10.1	11.141	20	13 22 25.21	2.2382	7 12 53.4	10.054
21	11 36 50.18	2.2622	1 15 01.5	11.145	21	13 24 39.50	2.2381	7 22 55.2	10.005
22	11 39 05.88	2.2611	1 03 52.7	11.148	22	13 26 53.78	2.2379	7 32 54.0	9.954
23	11 41 21.51	+ 2.2601	N. 0 52 43.7	-11.151	23	13 29 08.05	+ 2.2378	S. 7 42 49.7	-9.903
SUNDAY 18.					TUESDAY 20.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
0	11 43 37.09	+ 2.2592	N. 0 41 34.6	-11.152	0	13 31 22.32	+ 2.2378	S. 7 52 42.4	-9.852
1	11 45 52.61	2.2583	0 30 25.5	11.152	1	13 33 36.59	2.2378	8 02 31.9	9.798
2	11 48 08.08	2.2573	0 19 16.4	11.150	2	13 35 50.85	2.2377	8 12 18.2	9.745
3	11 50 23.49	2.2564	0 08 07.5	11.147	3	13 38 05.11	2.2376	8 22 01.3	9.690
4	11 52 38.85	2.2556	S. 0 03 01.2	11.143	4	13 40 19.36	2.2376	8 31 41.0	9.634
5	11 54 54.16	2.2548	0 14 09.7	11.139	5	13 42 33.62	2.2376	8 41 17.4	9.578
6	11 57 09.42	2.2539	0 25 17.9	11.133	6	13 44 47.87	2.2375	8 50 50.4	9.521
7	11 59 24.63	2.2531	0 36 25.6	11.124	7	13 47 02.12	2.2374	9 00 19.9	9.462
8	12 01 39.79	2.2523	0 47 32.8	11.116	8	13 49 16.36	2.2374	9 09 45.8	9.403
9	12 03 54.91	2.2516	0 58 39.5	11.107	9	13 51 30.61	2.2374	9 19 08.2	9.343
10	12 06 09.98	2.2508	1 09 45.6	11.096	10	13 53 44.85	2.2373	9 28 26.9	9.281
11	12 08 25.01	2.2502	1 20 51.0	11.084	11	13 55 59.09	2.2373	9 37 41.9	9.219
12	12 10 40.00	2.2495	1 31 55.7	11.071	12	13 58 13.33	2.2373	9 46 53.2	9.157
13	12 12 54.95	2.2488	1 42 59.5	11.056	13	14 00 27.57	2.2373	9 56 00.7	9.093
14	12 15 09.86	2.2482	1 54 02.4	11.040	14	14 02 41.81	2.2374	10 05 04.4	9.029
15	12 17 24.73	2.2476	2 05 04.3	11.023	15	14 04 56.06	2.2374	10 14 04.2	8.963
16	12 19 39.57	2.2470	2 16 05.2	10.995	16	14 07 10.30	2.2373	10 23 00.0	8.898
17	12 21 54.37	2.2464	2 27 04.9	10.966	17	14 09 24.54	2.2373	10 31 51.9	8.832
18	12 24 09.14	2.2459	2 38 03.5	10.966	18	14 11 38.78	2.2373	10 40 39.8	8.763
19	12 26 23.88	2.2454	2 49 00.8	10.945	19	14 13 53.02	2.2373	10 49 23.5	8.695
20	12 28 38.59	2.2448	2 59 56.9	10.923	20	14 16 07.26	2.2373	10 58 03.2	8.627
21	12 30 53.26	2.2443	3 10 51.5	10.898	21	14 18 21.50	2.2373	11 06 38.7	8.556
22	12 33 07.91	2.2439	3 21 44.7	10.874	22	14 20 35.73	2.2373	11 15 09.9	8.485
23	12 35 22.53	2.2434	3 32 36.4	10.848	23	14 22 49.97	2.2373	11 23 36.9	8.414
24	12 37 37.12	+ 2.2430	S. 3 43 26.4	-10.820	24	14 25 04.20	+ 2.2372	S. 11 31 59.6	-8.342

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
WEDNESDAY 21.					FRIDAY 23.				
0	14 25 04.20	+ 2.2372	S. 11 31 59.6	- 8.342	0	16 12 12.57	+ 2.2203	S. 16 38 31.6	- 4.263
1	14 27 18.43	2.2372	11 40 17.9	8.269	1	16 14 25.77	2.2195	16 42 44.6	4.170
2	14 29 32.66	2.2372	11 48 31.9	8.197	2	16 16 38.91	2.2186	16 46 52.0	4.078
3	14 31 46.89	2.2372	11 56 41.5	8.123	3	16 18 52.00	2.2177	16 50 53.9	3.984
4	14 34 01.12	2.2371	12 04 46.6	8.048	4	16 21 05.03	2.2168	16 54 50.1	3.889
5	14 36 15.34	2.2370	12 12 47.2	7.972	5	16 23 18.01	2.2158	16 58 40.6	3.796
6	14 38 29.56	2.2369	12 20 43.2	7.896	6	16 25 30.93	2.2149	17 02 25.6	3.703
7	14 40 43.77	2.2368	12 28 34.7	7.819	7	16 27 43.80	2.2139	17 06 04.9	3.608
8	14 42 57.98	2.2368	12 36 21.5	7.742	8	16 29 56.60	2.2128	17 09 38.6	3.514
9	14 45 12.18	2.2367	12 44 03.7	7.664	9	16 32 09.34	2.2118	17 13 06.6	3.420
10	14 47 26.38	2.2366	12 51 41.2	7.585	10	16 34 22.01	2.2107	17 16 29.0	3.326
11	14 49 40.57	2.2365	12 59 13.9	7.506	11	16 36 34.62	2.2096	17 19 45.7	3.231
12	14 51 54.76	2.2364	13 06 41.9	7.427	12	16 38 47.16	2.2084	17 22 56.7	3.137
13	14 54 08.94	2.2362	13 14 05.1	7.346	13	16 40 59.63	2.2073	17 26 02.1	3.043
14	14 56 23.10	2.2360	13 21 23.4	7.265	14	16 43 12.04	2.2062	17 29 01.9	2.949
15	14 58 37.26	2.2359	13 28 36.9	7.184	15	16 45 24.37	2.2049	17 31 56.0	2.854
16	15 00 51.41	2.2357	13 35 45.5	7.102	16	16 47 36.63	2.2037	17 34 44.4	2.760
17	15 03 05.54	2.2355	13 42 49.1	7.018	17	16 49 48.81	2.2024	17 37 27.2	2.666
18	15 05 19.67	2.2353	13 49 47.7	6.936	18	16 52 00.92	2.2012	17 40 04.3	2.571
19	15 07 33.78	2.2350	13 56 41.4	6.853	19	16 54 12.95	2.1998	17 42 35.7	2.477
20	15 09 47.87	2.2348	14 03 30.0	6.768	20	16 56 24.90	2.1985	17 45 01.5	2.383
21	15 12 01.95	2.2346	14 10 13.6	6.684	21	16 58 36.77	2.1972	17 47 21.7	2.289
22	15 14 16.02	2.2343	14 16 52.1	6.599	22	17 00 48.56	2.1958	17 49 36.2	2.194
23	15 16 30.07	+ 2.2341	S. 14 23 25.5	- 6.513	23	17 03 00.26	+ 2.1943	S. 17 51 45.0	- 2.100
THURSDAY 22.					SATURDAY 24.				
0	15 18 44.11	+ 2.2338	S. 14 29 53.7	- 6.428	0	17 05 11.87	+ 2.1928	S. 17 53 48.2	- 2.007
1	15 20 58.13	2.2334	14 36 16.8	6.342	1	17 07 23.40	2.1914	17 55 45.8	1.913
2	15 23 12.12	2.2331	14 42 34.7	6.254	2	17 09 34.84	2.1899	17 57 37.7	1.818
3	15 25 26.10	2.2328	14 48 47.3	6.167	3	17 11 46.19	2.1884	17 59 24.0	1.725
4	15 27 40.05	2.2323	14 54 54.7	6.080	4	17 13 57.45	2.1869	18 01 04.7	1.632
5	15 29 53.98	2.2319	15 00 56.9	5.993	5	17 16 08.62	2.1853	18 02 39.8	1.538
6	15 32 07.88	2.2315	15 06 53.8	5.904	6	17 18 19.69	2.1838	18 04 09.2	1.444
7	15 34 21.76	2.2312	15 12 45.4	5.815	7	17 20 30.67	2.1822	18 05 33.1	1.351
8	15 36 35.62	2.2307	15 18 31.6	5.726	8	17 22 41.55	2.1805	18 06 51.3	1.258
9	15 38 49.44	2.2302	15 24 12.5	5.637	9	17 24 52.33	2.1789	18 08 04.0	1.165
10	15 41 03.24	2.2297	15 29 48.0	5.547	10	17 27 03.02	2.1773	18 09 11.1	1.072
11	15 43 17.00	2.2291	15 35 18.1	5.457	11	17 29 13.60	2.1755	18 10 12.6	0.979
12	15 45 30.73	2.2286	15 40 42.8	5.367	12	17 31 24.08	2.1738	18 11 08.6	0.887
13	15 47 44.43	2.2281	15 46 02.1	5.276	13	17 33 34.46	2.1721	18 11 59.0	0.794
14	15 49 58.10	2.2275	15 51 15.9	5.185	14	17 35 44.73	2.1703	18 12 43.9	0.702
15	15 52 11.73	2.2269	15 56 24.3	5.094	15	17 37 54.89	2.1685	18 13 23.3	0.611
16	15 54 25.33	2.2263	16 01 27.2	5.003	16	17 40 04.95	2.1667	18 13 57.2	0.518
17	15 56 38.88	2.2256	16 06 24.6	4.911	17	17 42 14.89	2.1648	18 14 25.5	0.427
18	15 58 52.40	2.2249	16 11 16.5	4.819	18	17 44 24.73	2.1631	18 14 48.4	0.336
19	16 01 05.87	2.2242	16 16 02.9	4.727	19	17 46 34.46	2.1612	18 15 05.8	0.244
20	16 03 19.30	2.2235	16 20 43.7	4.634	20	17 48 44.07	2.1593	18 15 17.7	0.153
21	16 05 32.69	2.2228	16 25 19.0	4.542	21	17 50 53.57	2.1573	18 15 24.2	- 0.063
22	16 07 46.03	2.2220	16 29 48.8	4.450	22	17 53 02.95	2.1554	18 15 25.3	+ 0.028
23	16 09 59.33	2.2212	16 34 13.0	4.357	23	17 55 12.22	2.1535	18 15 20.9	0.118
24	16 12 12.57	+ 2.2203	S. 16 38 31.6	- 4.263	24	17 57 21.37	+ 2.1515	S. 18 15 11.1	+ 0.208

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
SUNDAY 25.					TUESDAY 27.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
0	17 57 21.37	+ 2.1515	S. 18 15 11.1	+ 0.208	0	19 38 09.44	+ 2.0466	S. 16 27 27.7	+ 4.143
1	17 59 30.40	2.1496	18 14 55.9	0.298	1	19 40 12.17	2.0443	16 23 16.9	4.217
2	18 01 39.32	2.1477	18 14 35.4	0.387	2	19 42 14.76	2.0422	16 19 01.7	4.289
3	18 03 48.12	2.1456	18 14 09.5	0.476	3	19 44 17.23	2.0401	16 14 42.2	4.361
4	18 05 56.79	2.1435	18 13 38.3	0.564	4	19 46 19.57	2.0378	16 10 18.4	4.433
5	18 08 05.34	2.1415	18 13 01.8	0.653	5	19 48 21.77	2.0357	16 05 50.3	4.503
6	18 10 13.77	2.1394	18 12 19.9	0.742	6	19 50 23.85	2.0336	16 01 18.0	4.574
7	18 12 22.07	2.1373	18 11 32.7	0.830	7	19 52 25.80	2.0314	15 56 41.4	4.644
8	18 14 30.25	2.1353	18 10 40.3	0.918	8	19 54 27.62	2.0293	15 52 00.7	4.714
9	18 16 38.31	2.1332	18 09 42.6	1.005	9	19 56 29.31	2.0272	15 47 15.7	4.784
10	18 18 46.24	2.1311	18 08 39.7	1.092	10	19 58 30.88	2.0252	15 42 26.6	4.853
11	18 20 54.04	2.1290	18 07 31.5	1.180	11	20 00 32.33	2.0230	15 37 33.4	4.921
12	18 23 01.72	2.1269	18 06 18.1	1.267	12	20 02 33.64	2.0208	15 32 36.1	4.989
13	18 25 09.27	2.1248	18 04 59.5	1.353	13	20 04 34.83	2.0188	15 27 34.7	5.057
14	18 27 16.69	2.1226	18 03 35.8	1.438	14	20 06 35.90	2.0168	15 22 29.3	5.124
15	18 29 23.98	2.1203	18 02 07.0	1.523	15	20 08 36.85	2.0148	15 17 19.8	5.192
16	18 31 31.13	2.1182	18 00 33.0	1.609	16	20 10 37.68	2.0128	15 12 06.3	5.258
17	18 33 38.16	2.1161	17 58 53.9	1.694	17	20 12 38.39	2.0108	15 06 48.9	5.323
18	18 35 45.06	2.1138	17 57 09.7	1.778	18	20 14 38.98	2.0088	15 01 27.5	5.389
19	18 37 51.82	2.1116	17 55 20.5	1.863	19	20 16 39.45	2.0068	14 56 02.2	5.454
20	18 39 58.45	2.1094	17 53 26.2	1.947	20	20 18 39.80	2.0049	14 50 33.0	5.519
21	18 42 04.95	2.1073	17 51 26.9	2.031	21	20 20 40.04	2.0030	14 44 59.9	5.584
22	18 44 11.32	2.1050	17 49 22.5	2.114	22	20 22 40.16	2.0011	14 39 22.9	5.648
23	18 46 17.55	+ 2.1027	S. 17 47 13.2	+ 2.196	23	20 24 40.17	+ 1.9992	S. 14 33 42.2	+ 5.711
MONDAY 26.					WEDNESDAY 28.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
0	18 48 23.64	+ 2.1005	S. 17 44 59.0	+ 2.278	0	20 26 40.06	+ 1.9973	S. 14 27 57.6	+ 5.774
1	18 50 29.61	2.0983	17 42 39.8	2.361	1	20 28 39.84	1.9955	14 22 09.3	5.837
2	18 52 35.44	2.0960	17 40 15.7	2.443	2	20 30 39.52	1.9937	14 16 17.2	5.898
3	18 54 41.13	2.0938	17 37 46.7	2.524	3	20 32 39.08	1.9918	14 10 21.5	5.960
4	18 56 46.69	2.0915	17 35 12.8	2.605	4	20 34 38.54	1.9901	14 04 22.0	6.022
5	18 58 52.11	2.0893	17 32 34.1	2.685	5	20 36 37.89	1.9883	13 58 18.9	6.083
6	19 00 57.40	2.0870	17 29 50.6	2.766	6	20 38 37.14	1.9867	13 52 12.1	6.143
7	19 03 02.55	2.0848	17 27 02.2	2.846	7	20 40 36.29	1.9849	13 46 01.7	6.203
8	19 05 07.57	2.0825	17 24 09.1	2.925	8	20 42 35.33	1.9832	13 39 47.8	6.262
9	19 07 12.45	2.0803	17 21 11.2	3.004	9	20 44 34.27	1.9815	13 33 30.3	6.322
10	19 09 17.20	2.0780	17 18 08.6	3.083	10	20 46 33.11	1.9799	13 27 09.2	6.381
11	19 11 21.81	2.0757	17 15 01.3	3.162	11	20 48 31.86	1.9783	13 20 44.6	6.438
12	19 13 26.28	2.0734	17 11 49.2	3.240	12	20 50 30.51	1.9767	13 14 16.6	6.496
13	19 15 30.62	2.0712	17 08 32.5	3.317	13	20 52 29.06	1.9751	13 07 45.1	6.553
14	19 17 34.82	2.0689	17 05 11.2	3.394	14	20 54 27.52	1.9736	13 01 10.2	6.611
15	19 19 38.89	2.0667	17 01 45.2	3.472	15	20 56 25.89	1.9721	12 54 31.8	6.668
16	19 21 42.82	2.0644	16 58 14.6	3.548	16	20 58 24.17	1.9706	12 47 50.1	6.723
17	19 23 46.62	2.0622	16 54 39.5	3.623	17	21 00 22.36	1.9692	12 41 05.1	6.778
18	19 25 50.28	2.0599	16 50 59.8	3.699	18	21 02 20.47	1.9678	12 34 16.7	6.834
19	19 27 53.81	2.0577	16 47 15.6	3.774	19	21 04 18.49	1.9663	12 27 25.0	6.889
20	19 29 57.21	2.0555	16 43 26.9	3.849	20	21 06 16.42	1.9649	12 20 30.0	6.943
21	19 32 00.47	2.0532	16 39 33.7	3.923	21	21 08 14.28	1.9636	12 13 31.8	6.998
22	19 34 03.59	2.0509	16 35 36.1	3.997	22	21 10 12.05	1.9623	12 06 30.3	7.051
23	19 36 06.58	2.0487	16 31 34.1	4.070	23	21 12 09.75	1.9610	11 59 25.7	7.103
24	19 38 09.44	+ 2.0466	S. 16 27 27.7	+ 4.143	24	21 14 07.37	+ 1.9598	S. 11 52 17.9	+ 7.156

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.															
THURSDAY 29.					SATURDAY 31.																			
	<small>h m s</small>	<small>s</small>	<small>° ' "</small>	<small>"</small>		<small>h m s</small>	<small>s</small>	<small>° ' "</small>	<small>"</small>															
0	21 14 07.37	+ 1.9598	S. 11 52 17.9	+ 7.156	0	22 47 22.12	+ 1.9396	S. 5 16 50.6	+ 9.139															
1	21 16 04.92	1.9585	11 45 07.0	7.208	1	22 49 18.51	1.9401	5 07 41.4	9.168															
2	21 18 02.39	1.9573	11 37 52.9	7.261	2	22 51 14.93	1.9407	4 58 30.4	9.197															
3	21 19 59.79	1.9561	11 30 35.7	7.312	3	22 53 11.39	1.9413	4 49 17.7	9.225															
4	21 21 57.12	1.9549	11 23 15.5	7.364	4	22 55 07.88	1.9418	4 40 03.4	9.253															
5	21 23 54.38	1.9538	11 15 52.3	7.413	5	22 57 04.41	1.9425	4 30 47.4	9.280															
6	21 25 51.58	1.9528	11 08 26.0	7.463	6	22 59 00.98	1.9433	4 21 29.8	9.307															
7	21 27 48.71	1.9518	11 00 56.8	7.512	7	23 00 57.60	1.9441	4 12 10.6	9.333															
8	21 29 45.79	1.9507	10 53 24.6	7.562	8	23 02 54.27	1.9449	4 02 49.9	9.358															
9	21 31 42.80	1.9497	10 45 49.4	7.610	9	23 04 50.99	1.9458	3 53 27.6	9.383															
10	21 33 39.75	1.9488	10 38 11.4	7.658	10	23 06 47.76	1.9466	3 44 03.9	9.408															
11	21 35 36.65	1.9478	10 30 30.5	7.706	11	23 08 44.58	1.9475	3 34 38.7	9.431															
12	21 37 33.49	1.9469	10 22 46.7	7.753	12	23 10 41.46	1.9485	3 25 12.2	9.453															
13	21 39 30.28	1.9461	10 15 00.1	7.800	13	23 12 38.40	1.9495	3 15 44.3	9.477															
14	21 41 27.02	1.9453	10 07 10.7	7.846	14	23 14 35.40	1.9506	3 06 15.0	9.499															
15	21 43 23.72	1.9446	9 59 18.6	7.892	15	23 16 32.47	1.9518	2 56 44.4	9.521															
16	21 45 20.37	1.9438	9 51 23.7	7.938	16	23 18 29.61	1.9528	2 47 12.5	9.542															
17	21 47 16.97	1.9431	9 43 26.1	7.983	17	23 20 26.81	1.9540	2 37 39.4	9.562															
18	21 49 13.54	1.9424	9 35 25.8	8.027	18	23 22 24.09	1.9553	2 28 05.1	9.581															
19	21 51 10.06	1.9418	9 27 22.9	8.070	19	23 24 21.44	1.9565	2 18 29.7	9.600															
20	21 53 06.55	1.9412	9 19 17.4	8.114	20	23 26 18.87	1.9578	2 08 53.1	9.619															
21	21 55 03.00	1.9406	9 11 09.2	8.158	21	23 28 16.38	1.9593	1 59 15.4	9.637															
22	21 56 59.42	1.9401	9 02 58.5	8.200	22	23 30 13.98	1.9607	1 49 36.7	9.653															
23	21 58 55.81	+ 1.9396	S. 8 54 45.2	+ 8.242	23	23 32 11.66	+ 1.9620	S. 1 39 57.0	+ 9.670															
FRIDAY 30.					SUNDAY, NOVEMBER 1.																			
0	22 00 52.17	+ 1.9391	S. 8 46 29.4	+ 8.284	0	23 34 09.42	+ 1.9635	S. 1 30 16.3	+ 9.687															
1	22 02 48.50	1.9387	8 38 11.1	8.325	PHASES OF THE MOON.																			
2	22 04 44.81	1.9383	8 29 50.4	8.366																				
3	22 06 41.10	1.9380	8 21 27.2	8.407																				
4	22 08 37.37	1.9377	8 13 01.6	8.446																				
5	22 10 33.62	1.9373	8 04 33.7	8.485	<table><tr><td></td><td></td><td><small>d h m</small></td></tr><tr><td>○</td><td>Full Moon</td><td>Oct. 6 03 23.6</td></tr><tr><td>☾</td><td>Last Quarter</td><td>13 07 56.4</td></tr><tr><td>●</td><td>New Moon</td><td>20 03 30.3</td></tr><tr><td>☾</td><td>First Quarter</td><td>27 20 32.5</td></tr></table>							<small>d h m</small>	○	Full Moon	Oct. 6 03 23.6	☾	Last Quarter	13 07 56.4	●	New Moon	20 03 30.3	☾	First Quarter	27 20 32.5
		<small>d h m</small>																						
○	Full Moon	Oct. 6 03 23.6																						
☾	Last Quarter	13 07 56.4																						
●	New Moon	20 03 30.3																						
☾	First Quarter	27 20 32.5																						
6	22 12 29.85	1.9372	7 56 03.4	8.524	<table><tr><td></td><td></td><td><small>d h</small></td></tr><tr><td>☾</td><td>Perigee</td><td>Oct. 16 03.7</td></tr><tr><td>☾</td><td>Apogee</td><td>28 05.9</td></tr></table>							<small>d h</small>	☾	Perigee	Oct. 16 03.7	☾	Apogee	28 05.9						
		<small>d h</small>																						
☾	Perigee	Oct. 16 03.7																						
☾	Apogee	28 05.9																						
7	22 14 26.08	1.9370	7 47 30.8	8.563																				
8	22 16 22.29	1.9368	7 38 55.9	8.601																				
9	22 18 18.49	1.9367	7 30 18.7	8.638																				
10	22 20 14.69	1.9366	7 21 39.3	8.674																				
11	22 22 10.88	1.9365	7 12 57.8	8.711																				
12	22 24 07.07	1.9365	7 04 14.0	8.748																				
13	22 26 03.26	1.9366	6 55 28.1	8.783																				
14	22 27 59.46	1.9367	6 46 40.1	8.818																				
15	22 29 55.66	1.9368	6 37 50.0	8.852																				
16	22 31 51.87	1.9369	6 28 57.9	8.885																				
17	22 33 48.09	1.9372	6 20 03.8	8.919																				
18	22 35 44.33	1.9374	6 11 07.6	8.952																				
19	22 37 40.58	1.9376	6 02 09.5	8.984																				
20	22 39 36.84	1.9379	5 53 09.5	9.016																				
21	22 41 33.13	1.9383	5 44 07.6	9.048																				
22	22 43 29.43	1.9386	5 35 03.8	9.079																				
23	22 45 25.76	1.9391	5 25 58.1	9.110																				
24	22 47 22.12	+ 1.9396	S. 5 16 50.6	+ 9.139																				

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.	Noon.	P. L. of Diff.	IIIh	P. L. of Diff.	VIh	P. L. of Diff.	IXh	P. L. of Diff.
		° ' "		° ' "		° ' "		° ' "	
1	SUN W.	122 09 54	3438	123 31 28	3434	124 53 06	3430	126 14 48	3426
	MARS W.	63 24 03	3357	64 47 09	3353	66 10 20	3349	67 33 35	3344
	Antares W.	61 35 09	3134	63 02 37	3129	64 30 11	3124	65 57 50	3119
	α Arietis E.	86 12 12	3168	84 45 25	3165	83 18 34	3162	81 51 40	3159
	Aldebaran E.	119 17 24	3064	117 48 30	3060	116 19 32	3056	114 50 29	3052
2	MARS W.	74 31 18	3316	75 55 11	3311	77 19 10	3303	78 43 18	3296
	Antares W.	73 17 54	3088	74 46 18	3082	76 14 50	3074	77 43 31	3067
	SATURN W.	19 06 24	3196	20 32 33	3172	21 59 17	3148	23 26 30	3127
	α Arietis E.	74 36 09	3141	73 08 49	3137	71 41 24	3133	70 13 54	3129
	Aldebaran E.	107 23 53	3028	105 54 15	3022	104 24 29	3016	102 54 36	3009
3	MARS W.	85 46 06	3257	87 11 08	3249	88 36 19	3241	90 01 40	3232
	Antares W.	85 09 14	3028	86 38 51	3020	88 08 39	3012	89 38 37	3004
	α Aquilæ W.	40 52 05	4047	42 02 58	3978	43 14 59	3974	44 28 05	3855
	SATURN W.	30 48 25	3042	32 17 46	3027	33 47 25	3014	35 17 20	3001
	α Arietis E.	62 55 05	3106	61 27 03	3103	59 58 57	3099	58 30 46	3095
	Aldebaran E.	95 23 00	2973	93 52 13	2964	92 21 15	2956	90 50 07	2947
4	MARS W.	97 11 08	3185	98 37 35	3176	100 04 13	3166	101 31 03	3156
	Antares W.	97 11 07	2960	98 42 10	2951	100 13 24	2942	101 44 50	2933
	α Aquilæ W.	50 47 28	3616	52 05 45	3577	53 24 44	3541	54 44 23	3506
	SATURN W.	42 50 47	2942	44 22 13	2930	45 53 54	2919	47 25 49	2908
	α Arietis E.	51 08 50	3082	49 40 18	3081	48 11 45	3081	46 43 12	3082
	Aldebaran E.	83 11 43	2903	81 39 28	2894	80 07 01	2884	78 34 22	2875
5	Antares W.	109 24 47	2889	110 57 20	2881	112 30 03	2872	114 02 58	2864
	MARS W.	108 48 11	3107	110 16 12	3097	111 44 25	3087	113 12 50	3077
	α Aquilæ W.	61 31 30	3362	62 54 30	3337	64 17 59	3313	65 41 56	3290
	SATURN W.	55 08 58	2852	56 42 18	2842	58 15 52	2831	59 49 40	2820
	α Arietis E.	39 21 09	3105	37 53 05	3116	36 25 15	3129	34 57 40	3145
	Aldebaran E.	70 48 00	2825	69 14 05	2816	67 39 58	2806	66 05 38	2796
	Pollux E.	113 46 49	2935	112 15 14	2923	110 43 24	2910	109 11 18	2898
6	α Aquilæ W.	72 47 48	3193	74 14 05	3176	75 40 43	3160	77 07 40	3145
	SATURN W.	67 42 09	2767	69 17 20	2757	70 52 44	2747	72 28 22	2737
	JUPITER W.	25 05 58	2751	26 41 30	2738	28 17 20	2724	29 53 28	2712
	Aldebaran E.	58 10 42	2746	56 35 03	2736	54 59 12	2726	53 23 07	2717
	Pollux E.	101 27 05	2842	99 53 32	2831	98 19 45	2820	96 45 43	2809
7	α Aquilæ W.	84 26 43	3079	85 55 18	3069	87 24 06	3058	88 53 07	3048
	SATURN W.	80 29 49	2688	82 06 45	2678	83 43 54	2669	85 21 16	2660
	JUPITER W.	37 58 09	2655	39 35 50	2644	41 13 45	2634	42 51 55	2624
	Aldebaran E.	45 19 31	2669	43 42 10	2660	42 04 36	2651	40 26 50	2641
	Pollux E.	88 52 13	2761	87 16 54	2752	85 41 23	2743	84 05 40	2734
8	α Aquilæ W.	96 20 52	3011	97 50 51	3005	99 20 57	3001	100 51 08	2997
	SATURN W.	93 31 06	2615	95 09 40	2607	96 48 25	2599	98 27 21	2591
	JUPITER W.	51 06 03	2576	52 45 31	2567	54 25 11	2558	56 05 04	2550
	Aldebaran E.	32 14 57	2598	30 35 58	2590	28 56 49	2581	27 17 28	2572
	Pollux E.	76 04 19	2695	74 27 32	2688	72 50 36	2681	71 13 31	2675
	Regulus E.	112 14 39	2607	110 35 53	2598	108 56 55	2589	107 17 45	2581

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.	Midnight.	P. L. of Diff.	XV ^h	P. L. of Diff.	XVIII ^h	P. L. of Diff.	XXI ^h	P. L. of Diff.
		° ' "		° ' "		° ' "		° ' "	
1	SUN W.	127 36 35	3421	128 58 28	3415	130 20 27	3410	131 42 32	3405
	MARS W.	68 56 56	3339	70 20 22	3334	71 43 54	3328	73 07 33	3322
	Antares W.	67 25 36	3114	68 53 29	3107	70 21 30	3101	71 49 38	3095
	α Arietis E.	80 24 42	3157	78 57 41	3153	77 30 35	3149	76 03 24	3145
	Aldebaran E.	113 21 21	3048	111 52 08	3044	110 22 50	3039	108 53 25	3033
2	MARS W.	80 07 34	3288	81 31 59	3281	82 56 32	3274	84 21 14	3265
	Antares W.	79 12 21	3060	80 41 20	3052	82 10 28	3044	83 39 46	3036
	SATURN W.	24 54 09	3106	26 22 12	3087	27 50 37	3071	29 19 22	3056
	α Arietis E.	68 46 19	3124	67 18 38	3120	65 50 53	3115	64 23 02	3110
	Aldebaran E.	101 24 34	3002	99 54 24	2996	98 24 06	2988	96 53 38	2980
3	MARS W.	91 27 12	3223	92 52 55	3214	94 18 48	3204	95 44 52	3194
	Antares W.	91 08 45	2995	92 39 04	2986	94 09 34	2977	95 40 15	2969
	α Aquilæ W.	45 42 11	3800	46 57 13	3748	48 13 09	3701	49 29 55	3657
	SATURN W.	36 47 31	2989	38 17 57	2977	39 48 38	2965	41 19 35	2953
	α Arietis E.	57 02 30	3091	55 34 10	3088	54 05 46	3086	52 37 19	3084
	Aldebaran E.	89 18 48	2939	87 47 18	2931	86 15 38	2921	84 43 46	2912
4	MARS W.	102 58 05	3146	104 25 19	3136	105 52 44	3126	107 20 22	3117
	Antares W.	103 16 27	2924	104 48 15	2915	106 20 15	2907	107 52 25	2898
	α Aquilæ W.	56 04 40	3475	57 25 32	3444	58 46 59	3415	60 08 59	3387
	SATURN W.	48 57 58	2896	50 30 22	2885	52 03 00	2874	53 35 52	2863
	α Arietis E.	45 14 40	3084	43 46 10	3087	42 17 44	3091	40 49 23	3097
	Aldebaran E.	77 01 31	2865	75 28 27	2855	73 55 11	2845	72 21 42	2835
5	Antares W.	115 36 03	2856	117 09 18	2848	118 42 44	2840	120 16 20	2832
	MARS W.	114 41 28	3068	116 10 17	3058	117 39 18	3048	119 08 31	3039
	α Aquilæ W.	67 06 19	3269	68 31 07	3250	69 56 17	3230	71 21 51	3211
	SATURN W.	61 23 42	2809	62 57 58	2798	64 32 28	2788	66 07 12	2778
	α Arietis E.	33 30 25	3166	32 03 35	3192	30 37 14	3222	29 11 30	3258
	Aldebaran E.	64 31 05	2786	62 56 19	2776	61 21 20	2766	59 46 08	2756
	Pollux E.	107 38 57	2887	106 06 21	2875	104 33 30	2864	103 00 25	2852
6	α Aquilæ W.	78 34 55	3130	80 02 28	3117	81 30 17	3103	82 58 23	3091
	SATURN W.	74 04 13	2727	75 40 17	2716	77 16 35	2707	78 53 06	2698
	JUPITER W.	31 29 52	2700	33 06 32	2687	34 43 29	2675	36 20 42	2665
	Aldebaran E.	51 46 50	2707	50 10 19	2698	48 33 36	2688	46 56 40	2678
	Pollux E.	95 11 26	2799	93 36 57	2789	92 02 15	2779	90 27 20	2770
7	α Aquilæ W.	90 22 20	3040	91 51 43	3031	93 21 17	3024	94 51 00	3017
	SATURN W.	86 58 50	2651	88 36 36	2642	90 14 34	2633	91 52 44	2624
	JUPITER W.	44 30 18	2613	46 08 55	2604	47 47 44	2594	49 26 47	2585
	Aldebaran E.	38 48 51	2633	37 10 41	2624	35 32 18	2615	33 53 43	2606
	Pollux E.	82 29 45	2725	80 53 39	2718	79 17 23	2710	77 40 56	2702
8	α Aquilæ W.	102 21 24	2995	103 51 43	2993	105 22 04	2992	106 52 27	2992
	SATURN W.	100 06 29	2583	101 45 48	2575	103 25 17	2567	105 04 57	2560
	JUPITER W.	57 45 08	2541	59 25 24	2533	61 05 51	2524	62 46 31	2516
	Aldebaran E.	25 37 55	2565	23 58 12	2557	22 18 18	2550	20 38 14	2542
	Pollux E.	69 36 17	2669	67 58 55	2663	66 21 26	2658	64 43 50	2653
	Regulus E.	105 38 24	2572	103 58 51	2564	102 19 06	2556	100 39 10	2548

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Noon.	P. L. of Diff.	IIIh	P. L. of Diff.	VIh	P. L. of Diff.	IXh	P. L. of Diff.
9	SATURN	W.	106 44 47	2553	108 24 47	2545	110 04 57	2538	111 45 17	2531
	JUPITER	W.	64 27 22	2507	66 08 24	2501	67 49 36	2493	69 30 59	2485
	Pollux	E.	63 06 07	2649	61 28 18	2645	59 50 24	2642	58 12 25	2639
	Regulus	E.	98 59 03	2540	97 18 45	2532	95 38 16	2524	93 57 36	2517
	VENUS	E.	115 35 42	2553	113 55 42	2545	112 15 32	2539	110 35 13	2533
10	JUPITER	W.	78 00 31	2449	79 42 56	2442	81 25 31	2435	83 08 16	2429
	α Arietis	W.	30 12 37	2895	31 45 02	2850	33 18 25	2810	34 52 40	2774
	Pollux	E.	50 01 52	2635	48 23 44	2637	46 45 39	2640	45 07 38	2644
	Regulus	E.	85 31 43	2480	83 50 02	2473	82 08 11	2466	80 26 11	2460
	VENUS	E.	102 11 28	2502	100 30 18	2497	98 49 00	2491	97 07 34	2485
	SUN	E.	132 50 09	2798	131 15 38	2791	129 40 58	2783	128 06 08	2776
11	JUPITER	W.	91 44 19	2396	93 28 00	2390	95 11 49	2384	96 55 47	2378
	α Arietis	W.	42 54 12	2643	44 32 09	2624	46 10 32	2604	47 49 21	2587
	Aldebaran	W.	8 14 17	2433	9 57 05	2424	11 40 05	2415	13 23 18	2407
	Regulus	E.	71 53 50	2428	70 10 55	2422	68 27 51	2415	66 44 38	2409
	VENUS	E.	88 38 27	2458	86 56 15	2453	85 13 56	2448	83 31 29	2443
	SUN	E.	120 09 37	2741	118 33 51	2734	116 57 56	2727	115 21 52	2719
12	JUPITER	W.	105 37 46	2349	107 22 34	2343	109 07 31	2337	110 52 36	2332
	α Arietis	W.	56 08 45	2518	57 49 33	2507	59 30 37	2496	61 11 56	2485
	Aldebaran	W.	22 02 14	2371	23 46 31	2365	25 30 56	2358	27 15 31	2352
	Regulus	E.	58 06 26	2380	56 22 23	2376	54 38 14	2370	52 53 56	2365
	VENUS	E.	74 57 35	2419	73 14 28	2415	71 31 14	2410	69 47 54	2405
	SUN	E.	107 19 17	2688	105 42 21	2681	104 05 16	2675	102 28 03	2669
13	α Arietis	W.	69 41 56	2441	71 24 33	2433	73 07 20	2426	74 50 18	2418
	Aldebaran	W.	36 00 32	2324	37 45 56	2318	39 31 29	2313	41 17 10	2308
	Regulus	E.	44 10 43	2342	42 25 45	2339	40 40 42	2335	38 55 33	2331
	VENUS	E.	61 09 40	2384	59 25 43	2381	57 41 41	2377	55 57 33	2373
	SUN	E.	94 19 54	2639	92 41 52	2634	91 03 43	2628	89 25 26	2623
14	α Arietis	W.	83 27 30	2389	85 11 21	2384	86 55 19	2380	88 39 23	2375
	Aldebaran	W.	50 07 22	2284	51 53 45	2279	53 40 15	2275	55 26 51	2270
	VENUS	E.	47 15 37	2356	45 31 00	2353	43 46 18	2350	42 01 32	2348
	SUN	E.	81 12 15	2598	79 33 17	2593	77 54 12	2588	76 15 01	2584
15	α Arietis	W.	97 21 08	2359	99 05 42	2357	100 50 18	2355	102 34 57	2355
	Aldebaran	W.	64 21 20	2253	66 08 29	2249	67 55 43	2247	69 43 01	2244
	VENUS	E.	33 16 54	2339	31 31 51	2337	29 46 46	2337	28 01 40	2338
	SUN	E.	67 57 39	2565	66 17 56	2562	64 38 08	2559	62 58 16	2556
16	Aldebaran	W.	78 40 20	2235	80 27 55	2234	82 15 32	2233	84 03 10	2233
	Pollux	W.	36 49 10	2491	38 30 36	2471	40 12 30	2453	41 54 49	2438
	SUN	E.	54 38 11	2547	52 58 03	2547	51 17 55	2546	49 37 46	2545
17	Aldebaran	W.	93 01 17	2236	94 48 51	2238	96 36 21	2240	98 23 49	2243
	Pollux	W.	50 30 54	2389	52 14 44	2384	53 58 42	2379	55 42 47	2375
	SUN	E.	41 17 05	2550	39 37 02	2553	37 57 02	2556	36 17 06	2559
18	Aldebaran	W.	107 20 01	2261	109 05 58	2266	110 53 47	2271	112 40 29	2277

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.	P. L. of Diff.	XVh	P. L. of Diff.	XVIIIh	P. L. of Diff.	XXIh	P. L. of Diff.
			° ' "		° ' "		° ' "		° ' "	
9	SATURN	W.	113 25 47	2525	115 06 28	2519	116 47 15	2512	118 28 12	2504
	JUPITER	W.	71 12 33	2478	72 54 17	2471	74 36 11	2463	76 18 16	2456
	Pollux	E.	56 34 23	2636	54 56 17	2635	53 18 09	2634	51 40 00	2635
	Regulus	E.	92 16 46	2510	90 35 46	2502	88 54 36	2494	87 13 15	2487
	VENUS	E.	108 54 46	2526	107 14 09	2520	105 33 24	2514	103 52 30	2508
10	JUPITER	W.	84 51 10	2422	86 34 13	2415	88 17 26	2409	90 00 48	2403
	α Arietis	W.	36 27 42	2742	38 03 26	2713	39 39 48	2688	41 16 44	2664
	Pollux	E.	43 29 42	2650	41 51 55	2658	40 14 18	2667	38 36 53	2678
	Regulus	E.	78 44 02	2453	77 01 43	2446	75 19 14	2440	73 36 36	2434
	VENUS	E.	95 26 00	2480	93 44 18	2475	92 02 29	2469	90 20 32	2463
	SUN	E.	126 31 09	2769	124 56 00	2762	123 20 42	2754	121 45 14	2747
11	JUPITER	W.	98 39 54	2372	100 24 09	2366	102 08 33	2360	103 53 05	2354
	α Arietis	W.	49 28 34	2572	51 08 07	2558	52 48 00	2543	54 28 13	2530
	Aldebaran	W.	15 06 43	2398	16 50 20	2390	18 34 09	2384	20 18 07	2378
	Regulus	E.	65 01 16	2403	63 17 46	2398	61 34 08	2391	59 50 21	2386
	VENUS	E.	81 48 56	2438	80 06 16	2433	78 23 29	2429	76 40 35	2424
	SUN	E.	113 45 38	2713	112 09 16	2707	110 32 45	2700	108 56 05	2694
12	JUPITER	W.	112 37 49	2327	114 23 09	2322	116 08 37	2317	117 54 12	2311
	α Arietis	W.	62 53 30	2476	64 35 17	2467	66 17 17	2458	67 59 30	2449
	Aldebaran	W.	29 00 15	2346	30 45 07	2341	32 30 07	2335	34 15 15	2329
	Regulus	E.	51 09 31	2360	49 24 59	2355	47 40 20	2351	45 55 35	2346
	VENUS	E.	68 04 27	2402	66 20 55	2397	64 37 16	2393	62 53 31	2389
	SUN	E.	100 50 41	2663	99 13 12	2657	97 35 34	2651	95 57 48	2645
13	α Arietis	W.	76 33 27	2412	78 16 45	2406	80 00 11	2400	81 43 46	2394
	Aldebaran	W.	43 02 58	2302	44 48 54	2298	46 34 57	2294	48 21 06	2289
	Regulus	E.	37 10 19	2328	35 25 01	2326	33 39 39	2324	31 54 14	2322
	VENUS	E.	54 13 20	2370	52 29 02	2366	50 44 38	2363	49 00 10	2359
	SUN	E.	87 47 02	2618	86 08 31	2612	84 29 53	2607	82 51 07	2602
14	α Arietis	W.	90 23 34	2371	92 07 50	2367	93 52 12	2364	95 36 38	2362
	Aldebaran	W.	57 13 34	2266	59 00 23	2264	60 47 16	2260	62 34 15	2256
	VENUS	E.	40 16 42	2346	38 31 49	2344	36 46 54	2342	35 01 55	2340
	SUN	E.	74 35 43	2580	72 56 20	2576	71 16 52	2572	69 37 18	2568
15	α Arietis	W.	104 19 37	2355	106 04 17	2354	107 48 58	2355	109 33 38	2355
	Aldebaran	W.	71 30 23	2242	73 17 48	2240	75 05 16	2238	76 52 47	2237
	VENUS	E.	26 16 34	2338	24 31 30	2339	22 46 27	2340	21 01 25	2341
	SUN	E.	61 18 21	2554	59 38 22	2552	57 58 21	2550	56 18 17	2548
16	Aldebaran	W.	85 50 48	2233	87 38 27	2234	89 26 04	2234	91 13 41	2235
	Pollux	W.	43 37 29	2425	45 20 28	2414	47 03 43	2404	48 47 13	2396
	SUN	E.	47 57 36	2546	46 17 27	2546	44 37 18	2548	42 57 11	2548
17	Aldebaran	W.	100 11 13	2245	101 58 33	2249	103 45 48	2252	105 32 58	2257
	Pollux	W.	57 26 57	2373	59 11 10	2372	60 55 25	2371	62 39 41	2371
	SUN	E.	34 37 14	2562	32 57 27	2566	31 17 46	2571	29 38 11	2577
18	Aldebaran	W.	114 27 03	2283	116 13 27	2289	117 59 42	2296	119 45 47	2304

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Noon.	P. L. of Diff.	IIIh	P. L. of Diff.	VIh	P. L. of Diff.	IXh	P. L. of Diff.
18	Pollux	W.	64 23 57	2373	66 08 11	2375	67 52 22	2377	69 36 30	2380
	SUN	E.	27 58 44	2583	26 19 25	2589	24 40 15	2596	23 01 14	2603
22	SUN	W.	23 29 05	2946	25 00 26	2961	26 31 28	2975	28 02 12	2989
	SATURN	E.	71 49 21	2624	70 10 59	2639	68 32 57	2654	66 55 15	2669
	JUPITER	E.	112 54 12	2584	111 14 55	2598	109 35 57	2612	107 57 19	2627
23	SUN	W.	35 31 11	3067	37 00 01	3082	38 28 33	3097	39 56 46	3112
	SATURN	E.	58 51 54	2747	57 16 16	2762	55 40 58	2778	54 06 01	2793
	JUPITER	E.	99 49 06	2700	98 12 26	2715	96 36 06	2729	95 00 04	2743
24	SUN	W.	47 13 18	3187	48 39 43	3202	50 05 50	3215	51 31 41	3229
	SATURN	E.	46 16 19	2871	44 43 23	2886	43 10 46	2902	41 38 30	2917
	JUPITER	E.	87 04 36	2813	85 30 25	2827	83 56 32	2839	82 22 55	2852
25	SUN	W.	58 36 58	3294	60 01 16	3306	61 25 20	3318	62 49 11	3330
	SATURN	E.	34 02 06	2997	32 31 50	3014	31 01 55	3031	29 32 21	3050
	JUPITER	E.	74 38 55	2913	73 06 53	2924	71 35 06	2935	70 03 32	2946
26	SUN	W.	69 45 19	3379	71 07 59	3388	72 30 29	3396	73 52 50	3404
	JUPITER	E.	62 28 56	2993	60 58 35	3002	59 28 25	3010	57 58 25	3018
	α Arietis	E.	113 16 15	3124	111 48 34	3129	110 21 00	3134	108 53 32	3140
27	SUN	W.	80 42 35	3435	82 04 12	3440	83 25 43	3444	84 47 10	3448
	JUPITER	E.	50 30 34	3049	49 01 22	3054	47 32 16	3059	46 03 16	3063
	α Arietis	E.	101 37 38	3161	100 10 42	3164	98 43 50	3167	97 17 01	3169
28	SUN	W.	91 33 33	3458	92 54 44	3458	94 15 55	3458	95 37 06	3458
	Antares	W.	57 42 30	3149	59 09 40	3148	60 36 52	3145	62 04 07	3142
	MARS	W.	40 08 01	3420	41 29 55	3417	42 51 52	3415	44 13 52	3411
	JUPITER	E.	38 39 23	3078	37 10 46	3080	35 42 12	3082	34 13 40	3083
	α Arietis	E.	90 03 33	3177	88 36 56	3178	87 10 20	3178	85 43 44	3177
	Aldebaran	E.	123 13 34	3073	121 44 52	3073	120 16 09	3073	118 47 26	3072
29	SUN	W.	102 23 22	3447	103 44 46	3443	105 06 14	3438	106 27 47	3433
	Antares	W.	69 21 20	3124	70 49 00	3119	72 16 46	3114	73 44 39	3109
	MARS	W.	51 04 59	3389	52 27 28	3384	53 50 03	3378	55 12 45	3372
	α Arietis	E.	78 30 28	3170	77 03 43	3168	75 36 56	3166	74 10 06	3163
	Aldebaran	E.	111 23 26	3061	109 54 29	3057	108 25 27	3053	106 56 20	3049
30	SUN	W.	113 17 04	3402	114 39 18	3395	116 01 40	3387	117 24 11	3379
	Antares	W.	81 05 50	3077	82 34 28	3069	84 03 16	3060	85 32 14	3052
	MARS	W.	62 08 11	3335	63 31 42	3326	64 55 23	3318	66 19 14	3309
	α Arietis	E.	66 54 56	3144	65 27 40	3141	64 00 20	3137	62 32 55	3132
	Aldebaran	E.	99 29 13	3019	97 59 24	3013	96 29 27	3005	94 59 20	2997
31	SUN	W.	124 19 21	3331	125 42 57	3320	127 06 45	3309	128 30 46	3298
	Antares	W.	92 59 42	3007	94 29 46	2997	96 00 02	2987	97 30 31	2977
	MARS	W.	73 21 16	3259	74 46 16	3247	76 11 30	3235	77 36 58	3224
	α Arietis	E.	55 14 29	3110	53 46 32	3107	52 18 31	3104	50 50 26	3101
	Aldebaran	E.	87 26 07	2952	85 54 54	2942	84 23 28	2931	82 51 49	2920

GREENWICH MEAN TIME.										
LUNAR DISTANCES.										
Day of the Month.	Name and Direction of Object.		Midnight.	P. L. of Diff.	XVh	P. L. of Diff.	XVIIIh	P. L. of Diff.	XXIh	P. L. of Diff.
			° ' "		° ' "		° ' "		° ' "	
18	Pollux	W.	71 20 33	2384	73 04 30	2389	74 48 20	2394	76 32 04	2399
	SUN	E.	21 22 23	2612	19 43 45	2623	18 05 21	2634	16 27 12	2645
22	SUN	W.	29 32 38	3005	31 02 44	3020	32 32 32	3035	34 02 01	3051
	SATURN	E.	65 17 54	2684	63 40 53	2700	62 04 13	2715	60 27 53	2731
	JUPITER	E.	106 19 01	2642	104 41 03	2657	103 03 25	2671	101 26 06	2685
23	SUN	W.	41 24 41	3128	42 52 17	3143	44 19 35	3158	45 46 35	3172
	SATURN	E.	52 31 24	2808	50 57 07	2824	49 23 11	2840	47 49 35	2855
	JUPITER	E.	93 24 21	2757	91 48 57	2771	90 13 52	2785	88 39 05	2799
24	SUN	W.	52 57 16	3243	54 22 34	3256	55 47 37	3269	57 12 25	3282
	SATURN	E.	40 06 33	2933	38 34 56	2949	37 03 39	2965	35 32 42	2981
	JUPITER	E.	80 49 35	2865	79 16 32	2877	77 43 44	2890	76 11 12	2901
25	SUN	W.	64 12 48	3340	65 36 13	3350	66 59 26	3360	68 22 28	3370
	SATURN	E.	28 03 09	3069	26 34 21	3089	25 05 57	3110	23 37 59	3131
	JUPITER	E.	68 32 12	2956	67 01 05	2966	65 30 10	2976	63 59 27	2985
26	SUN	W.	75 15 02	3411	76 37 06	3418	77 59 02	3423	79 20 52	3430
	JUPITER	E.	56 28 34	3025	54 58 52	3032	53 29 19	3038	51 59 53	3043
	α Arietis	E.	107 26 11	3144	105 58 55	3149	104 31 45	3153	103 04 39	3157
27	SUN	W.	86 08 32	3451	87 29 51	3453	88 51 07	3455	90 12 21	3457
	JUPITER	E.	44 34 21	3067	43 05 31	3070	41 36 45	3073	40 08 02	3076
	α Arietis	E.	95 50 15	3171	94 23 32	3173	92 56 51	3174	91 30 11	3176
28	SUN	W.	96 58 17	3456	98 19 29	3454	99 40 44	3452	101 02 02	3450
	Antares	W.	63 31 26	3139	64 58 49	3136	66 26 15	3133	67 53 45	3129
	MARS	W.	45 35 56	3407	46 58 04	3403	48 20 17	3399	49 42 35	3393
	JUPITER	E.	32 45 10	3084	31 16 41	3086	29 48 14	3087	28 19 48	3087
	α Arietis	E.	84 17 07	3176	82 50 29	3175	81 23 51	3174	79 57 11	3172
	Aldebaran	E.	117 18 42	3071	115 49 57	3069	114 21 10	3067	112 52 20	3064
29	SUN	W.	107 49 26	3428	109 11 10	3423	110 33 01	3416	111 54 59	3410
	Antares	W.	75 12 38	3103	76 40 44	3097	78 08 58	3091	79 37 21	3084
	MARS	W.	56 35 34	3365	57 58 30	3358	59 21 35	3350	60 44 49	3343
	α Arietis	E.	72 43 12	3160	71 16 15	3156	69 49 13	3152	68 22 07	3148
	Aldebaran	E.	105 27 08	3044	103 57 50	3039	102 28 25	3033	100 58 53	3026
30	SUN	W.	118 46 52	3370	120 09 43	3361	121 32 44	3351	122 55 57	3341
	Antares	W.	87 01 22	3044	88 30 40	3035	90 00 09	3026	91 29 50	3017
	MARS	W.	67 43 16	3300	69 07 28	3289	70 31 52	3279	71 56 28	3269
	α Arietis	E.	61 05 24	3128	59 37 48	3124	58 10 07	3119	56 42 21	3114
	Aldebaran	E.	93 29 03	2989	91 58 36	2980	90 27 58	2971	88 57 08	2962
31	SUN	W.	129 55 00	3287	131 19 27	3275	132 44 08	3263	134 09 03	3251
	Antares	W.	99 01 13	2966	100 32 08	2956	102 03 16	2945	103 34 38	2934
	MARS	W.	79 02 39	3212	80 28 34	3200	81 54 43	3188	83 21 07	3174
	α Arietis	E.	49 22 18	3099	47 54 07	3097	46 25 54	3096	44 57 39	3094
	Aldebaran	E.	81 19 56	2909	79 47 49	2898	78 15 28	2887	76 42 52	2874

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S					Sidereal Time of Semi-diameter Passing Meridian.	Equation of Time, to be Subtracted from Apparent Time.	Diff. for 1 Hour.
		Apparent Right Ascension.	Diff. for 1 Hour.	Apparent Declination.	Diff. for 1 Hour.	Semi-diameter.			
		h m s	s	° ' "	"	' "	s	m s	s
SUN.	1	14 22 03.36	+ 9.763	S. 14 08 32.4	- 48.61	16 08.98	66.80	16 17.32	0.093
Mon.	2	14 25 58.04	9.796	14 27 52.4	48.05	16 09.24	66.91	16 19.18	0.060
Tues.	3	14 29 53.51	9.829	14 46 58.4	47.45	16 09.49	67.03	16 20.26	0.027
Wed.	4	14 33 49.78	+ 9.863	15 05 49.9	- 46.84	16 09.73	67.14	16 20.55	0.006
Thur.	5	14 37 46.87	9.897	15 24 26.6	46.22	16 09.97	67.26	16 20.02	0.040
Frid.	6	14 41 44.78	9.932	15 42 48.1	45.57	16 10.21	67.38	16 18.66	0.075
Sat.	7	14 45 43.54	+ 9.967	16 00 54.0	- 44.91	16 10.45	67.49	16 16.47	0.110
SUN.	8	14 49 43.14	10.002	16 18 43.8	44.24	16 10.68	67.61	16 13.43	0.145
Mon.	9	14 53 43.59	10.038	16 36 17.4	43.55	16 10.91	67.73	16 09.54	0.181
Tues.	10	14 57 44.91	+ 10.074	16 53 34.1	- 42.84	16 11.13	67.85	16 04.79	0.217
Wed.	11	15 01 47.10	10.110	17 10 33.7	42.12	16 11.36	67.97	15 59.18	0.253
Thur.	12	15 05 50.16	10.146	17 27 15.7	41.38	16 11.58	68.09	15 52.68	0.289
Frid.	13	15 09 54.10	+ 10.183	17 43 39.7	- 40.62	16 11.79	68.21	15 45.32	0.326
Sat.	14	15 13 58.90	10.219	17 59 45.4	39.84	16 12.01	68.33	15 37.09	0.362
SUN.	15	15 18 04.58	10.256	18 15 32.2	39.05	16 12.22	68.45	15 28.00	0.398
Mon.	16	15 22 11.12	+ 10.292	18 30 59.9	- 38.25	16 12.43	68.57	15 18.02	0.434
Tues.	17	15 26 18.52	10.327	18 46 08.0	37.42	16 12.64	68.68	15 07.22	0.469
Wed.	18	15 30 26.77	10.362	19 00 56.1	36.58	16 12.84	68.80	14 55.56	0.504
Thur.	19	15 34 35.86	+ 10.397	19 15 23.9	- 35.72	16 13.04	68.92	14 43.06	0.539
Frid.	20	15 38 45.78	10.431	19 29 30.9	34.85	16 13.24	69.03	14 29.73	0.573
Sat.	21	15 42 56.52	10.465	19 43 16.8	33.96	16 13.44	69.14	14 15.60	0.607
SUN.	22	15 47 08.06	+ 10.498	19 56 41.1	- 33.06	16 13.64	69.25	14 00.64	0.640
Mon.	23	15 51 20.39	10.530	20 09 43.6	32.14	16 13.83	69.36	13 44.91	0.672
Tues.	24	15 55 33.50	10.563	20 22 23.8	31.20	16 14.02	69.47	13 28.41	0.705
Wed.	25	15 59 47.38	+ 10.595	20 34 41.4	- 30.25	16 14.21	69.58	13 11.12	0.736
Thur.	26	16 04 02.01	10.626	20 46 36.0	29.29	16 14.39	69.68	12 53.11	0.767
Frid.	27	16 08 17.37	10.656	20 58 07.4	28.31	16 14.58	69.78	12 34.35	0.797
Sat.	28	16 12 33.45	+ 10.686	21 09 15.0	- 27.32	16 14.75	69.88	12 14.88	0.827
SUN.	29	16 16 50.24	10.715	21 19 58.8	26.31	16 14.92	69.98	11 54.70	0.856
Mon.	30	16 21 07.71	10.743	21 30 18.3	25.30	16 15.08	70.08	11 33.84	0.884
Tues.	31	16 25 25.86	+ 10.770	S. 21 40 13.2	- 24.27	16 15.25	70.17	11 12.32	0.911

NOTE.—The mean time of semidiameter passing the meridian may be found by subtracting 0.19^s from the sidereal time.
 The sign — prefixed to the hourly change of declination indicates that south declinations are increasing.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S				Equation of Time, to be Added to Mean Time.	Diff. for 1 Hour.	Sidereal Time, or Right Ascension of Mean Sun.
		Apparent Right Ascension.	Diff. for 1 Hour.	Apparent Declination.	Diff. for 1 Hour.			
		h m s	s	° ' "	"	m s	s	h m s
<i>SUN.</i>	1	14 22 06.01	+ 9.763	S. 14 08 45.6	- 48.61	16 17.34	+ 0.093	14 38 23.35
Mon.	2	14 26 00.71	9.796	14 28 05.5	48.04	16 19.20	0.060	14 42 19.91
Tues.	3	14 29 56.19	9.829	14 47 11.3	47.44	16 20.27	+ 0.027	14 46 16.46
Wed.	4	14 33 52.47	+ 9.862	15 06 02.6	- 46.83	16 20.55	- 0.006	14 50 13.02
Thur.	5	14 37 49.56	9.896	15 24 39.2	46.21	16 20.01	0.040	14 54 09.57
Frid.	6	14 41 47.48	9.931	15 43 00.5	45.56	16 18.64	0.075	14 58 06.12
Sat.	7	14 45 46.24	+ 9.966	16 01 06.2	- 44.90	16 16.44	- 0.110	15 02 02.68
<i>SUN.</i>	8	14 49 45.84	10.001	16 18 55.8	44.23	16 13.39	0.145	15 05 59.23
Mon.	9	14 53 46.30	10.037	16 36 29.1	43.54	16 09.49	0.181	15 09 55.79
Tues.	10	14 57 47.61	+ 10.073	16 53 45.6	- 42.83	16 04.73	- 0.217	15 13 52.34
Wed.	11	15 01 49.79	10.109	17 10 44.9	42.11	15 59.11	0.253	15 17 48.90
Thur.	12	15 05 52.85	10.145	17 27 26.6	41.37	15 52.60	0.289	15 21 45.45
Frid.	13	15 09 56.77	+ 10.182	17 43 50.4	- 40.61	15 45.23	- 0.326	15 25 42.00
Sat.	14	15 14 01.56	10.218	17 59 55.7	39.83	15 37.00	0.362	15 29 38.56
<i>SUN.</i>	15	15 18 07.22	10.254	18 15 42.2	39.04	15 27.90	0.398	15 33 35.12
Mon.	16	15 22 13.75	+ 10.290	18 31 09.6	- 38.24	15 17.92	- 0.434	15 37 31.67
Tues.	17	15 26 21.13	10.325	18 46 17.4	37.41	15 07.10	0.469	15 41 28.23
Wed.	18	15 30 29.35	10.360	19 01 05.2	36.57	14 55.43	0.504	15 45 24.78
Thur.	19	15 34 38.41	+ 10.395	19 15 32.7	- 35.71	14 42.93	- 0.539	15 49 21.34
Frid.	20	15 38 48.30	10.429	19 29 39.4	34.84	14 29.59	0.573	15 53 17.89
Sat.	21	15 42 59.00	10.463	19 43 24.9	33.95	14 15.45	0.607	15 57 14.45
<i>SUN.</i>	22	15 47 10.51	+ 10.496	19 56 48.9	- 33.05	14 00.49	- 0.640	16 01 11.00
Mon.	23	15 51 22.80	10.528	20 09 51.0	32.13	13 44.76	0.672	16 05 07.56
Tues.	24	15 55 35.87	10.561	20 22 30.8	31.19	13 28.25	0.705	16 09 04.12
Wed.	25	15 59 49.71	+ 10.592	20 34 48.0	- 30.24	13 10.96	- 0.736	16 13 00.67
Thur.	26	16 04 04.29	10.623	20 46 42.3	29.28	12 52.94	0.767	16 16 57.23
Frid.	27	16 08 19.60	10.653	20 58 13.3	28.30	12 34.18	0.797	16 20 53.78
Sat.	28	16 12 35.63	+ 10.683	21 09 20.6	- 27.31	12 14.71	- 0.827	16 24 50.34
<i>SUN.</i>	29	16 16 52.37	10.712	21 20 04.0	26.30	11 54.53	0.856	16 28 46.90
Mon.	30	16 21 09.78	10.740	21 30 23.2	25.29	11 33.67	0.884	16 32 43.45
Tues.	31	16 25 27.86	+ 10.767	S. 21 40 17.8	- 24.26	11 12.15	- 0.911	16 36 40.01

NOTE.—The semidiameter for mean noon may be assumed the same as that for apparent noon.
The sign — prefixed to the hourly change of declination indicates that south declinations are increasing.

Diff. for 1 Hour,
+ 9.8565.
(Table III.)

AT GREENWICH MEAN NOON.									
Day of the Month.	Day of the Year.	THE SUN'S					Logarithm of the Radius Vector of the Earth.	Diff. for 1 Hour.	Mean Time of Sidereal Noon.
		TRUE LONGITUDE.		Diff. for 1 Hour.	LATITUDE.				
		λ	λ'						
1	305	217 53 47.8	53 05.8	+150.09	+ 0.61	9.996 6307	- 47.8	h m s 9 20 04.64	
2	306	218 53 50.7	53 08.6	150.16	0.48	9.996 5167	47.2	9 16 08.73	
3	307	219 53 55.4	53 13.2	150.23	0.35	9.996 4042	46.6	9 12 12.82	
4	308	220 54 01.9	53 19.5	+150.31	+ 0.22	9.996 2933	- 45.9	9 08 16.92	
5	309	221 54 10.1	53 27.6	150.38	0.11	9.996 1841	45.2	9 04 21.01	
6	310	222 54 20.1	53 37.5	150.46	+ 0.02	9.996 0765	44.4	9 00 25.10	
7	311	223 54 32.0	53 49.2	+150.54	- 0.05	9.995 9708	- 43.7	8 56 29.19	
8	312	224 54 45.8	54 02.9	150.62	0.08	9.995 8667	43.0	8 52 33.28	
9	313	225 55 01.6	54 18.6	150.70	0.09	9.995 7643	42.3	8 48 37.37	
10	314	226 55 19.4	54 36.3	+150.78	- 0.07	9.995 6635	- 41.7	8 44 41.47	
11	315	227 55 39.1	54 55.9	150.87	- 0.01	9.995 5642	41.1	8 40 45.56	
12	316	228 56 00.9	55 17.6	150.95	+ 0.08	9.995 4663	40.5	8 36 49.65	
13	317	229 56 24.7	55 41.2	+151.03	+ 0.18	9.995 3697	- 40.0	8 32 53.74	
14	318	230 56 50.4	56 06.9	151.11	0.31	9.995 2743	39.5	8 28 57.83	
15	319	231 57 18.1	56 34.3	151.19	0.45	9.995 1799	39.1	8 25 01.92	
16	320	232 57 47.5	57 03.7	+151.26	+ 0.58	9.995 0865	- 38.7	8 21 06.01	
17	321	233 58 18.7	57 34.7	151.33	0.69	9.994 9941	38.3	8 17 10.10	
18	322	234 58 51.6	58 07.3	151.40	0.80	9.994 9026	37.9	8 13 14.19	
19	323	235 59 26.1	58 41.6	+151.47	+ 0.89	9.994 8119	- 37.6	8 09 18.28	
20	324	236 60 02.1	59 17.6	151.53	0.96	9.994 7222	37.2	8 05 22.37	
21	325	237 60 39.4	59 54.9	151.59	1.00	9.994 6335	36.7	8 01 26.46	
22	326	239 01 18.1	0 33.4	+151.64	+ 1.01	9.994 5460	- 36.2	7 57 30.55	
23	327	240 01 58.1	1 13.2	151.69	0.99	9.994 4596	35.7	7 53 34.64	
24	328	241 02 39.2	1 54.2	151.74	0.94	9.994 3745	35.2	7 49 38.73	
25	329	242 03 21.5	2 36.4	+151.79	+ 0.87	9.994 2908	- 34.5	7 45 42.82	
26	330	243 04 04.9	3 19.6	151.83	0.78	9.994 2087	33.9	7 41 46.91	
27	331	244 04 49.3	4 03.9	151.87	0.67	9.994 1282	33.2	7 37 51.00	
28	332	245 05 34.8	4 49.2	+151.91	+ 0.55	9.994 0496	- 32.4	7 33 55.09	
29	333	246 06 21.3	5 35.5	151.96	0.43	9.993 9729	31.6	7 29 59.18	
30	334	247 07 08.7	6 22.8	152.00	0.30	9.993 8982	30.7	7 26 03.27	
31	335	248 07 57.1	7 11.1	+152.04	+ 0.16	9.993 8257	- 29.7	7 22 07.36	
NOTE.—The longitudes in the column λ are referred to the true equinox of their own date, while those in the column λ' are referred to the mean equinox of the beginning of the Besselian fictitious year.									Diff. for 1 Hour, —9.8296". (Table II.)

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month.	SEMIDIAMETER.		HORIZONTAL PARALLAX.				UPPER TRANSIT.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 Hour.	Midnight.	Diff. for 1 Hour.	Meridian of Greenwich.	Diff. for 1 Hour.	Noon.
	" "	" "	" "	" "	" "	" "	h m	m	d
1	15 06.7	15 11.4	55 21.8	+ 1.37	55 38.9	+ 1.48	9 12.4	+ 1.88	11.9
2	15 16.4	15 21.6	55 57.3	1.56	56 16.4	1.61	9 58.0	1.94	12.9
3	15 26.9	15 32.2	56 35.9	1.63	56 55.5	1.62	10 45.5	2.03	13.9
4	15 37.5	15 42.6	57 14.7	+ 1.58	57 33.4	+ 1.51	11 35.3	+ 2.13	14.9
5	15 47.4	15 51.9	57 51.1	1.42	58 07.5	1.31	12 27.7	2.24	15.9
6	15 56.0	15 59.6	58 22.5	1.18	58 35.8	1.03	13 22.7	2.33	16.9
7	16 02.7	16 05.4	58 47.3	+ 0.88	58 57.0	+ 0.73	14 19.6	+ 2.40	17.9
8	16 07.5	16 09.1	59 04.8	0.57	59 10.7	0.42	15 17.5	2.41	18.9
9	16 10.2	16 10.9	59 14.9	0.28	59 17.4	+ 0.14	16 15.0	2.38	19.9
10	16 11.2	16 11.1	59 18.3	+ 0.02	59 17.9	- 0.09	17 11.3	+ 2.31	20.9
11	16 10.6	16 09.8	59 16.2	- 0.19	59 13.3	0.29	18 06.0	2.24	21.9
12	16 08.7	16 07.3	59 09.3	0.38	59 04.2	0.46	18 58.9	2.17	22.9
13	16 05.7	16 03.7	58 58.1	- 0.54	58 51.1	- 0.63	19 50.3	+ 2.12	23.9
14	16 01.5	15 59.1	58 43.1	0.71	58 34.0	0.80	20 40.9	2.10	24.9
15	15 56.3	15 53.3	58 23.9	0.88	58 12.8	0.97	21 31.1	2.09	25.9
16	15 50.0	15 46.4	58 00.6	- 1.05	57 47.4	- 1.14	22 21.5	+ 2.11	26.9
17	15 42.5	15 38.5	57 33.3	1.21	57 18.3	1.28	23 12.2	2.12	27.9
18	15 34.2	15 29.7	57 02.5	1.33	56 46.2	1.38	0		28.9
19	15 25.2	15 20.6	56 29.5	- 1.40	56 12.6	- 1.40	0 03.2	+ 2.13	0.3
20	15 16.0	15 11.5	55 55.8	1.38	55 39.4	1.34	0 54.3	2.12	1.3
21	15 07.2	15 03.2	55 23.6	1.28	55 08.8	1.19	1 44.9	2.09	2.3
22	14 59.4	14 56.1	54 55.1	- 1.08	54 42.9	- 0.95	2 34.4	+ 2.04	3.3
23	14 53.2	14 50.9	54 32.3	0.82	54 23.7	0.67	3 22.5	1.97	4.3
24	14 49.1	14 47.9	54 17.1	0.45	54 12.9	- 0.25	4 09.1	1.91	5.3
25	14 47.4	14 47.6	54 11.0	- 0.05	54 11.7	+ 0.16	4 54.2	+ 1.85	6.3
26	14 48.5	14 50.1	54 15.0	+ 0.38	54 20.9	0.60	5 38.1	1.82	7.3
27	14 52.5	14 55.5	54 29.5	0.82	54 40.7	1.03	6 21.4	1.81	8.3
28	14 59.2	15 03.6	54 54.4	+ 1.24	55 10.4	+ 1.43	7 04.9	+ 1.82	9.3
29	15 08.6	15 14.1	55 28.7	1.60	55 48.9	1.75	7 49.1	1.88	10.3
30	15 20.1	15 26.4	56 10.7	1.88	56 33.9	1.97	8 35.0	1.96	11.3
31	15 32.9	15 39.6	56 58.0	+ 2.03	57 22.5	+ 2.04	9 23.3	+ 2.07	12.3

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
SUNDAY 1.					TUESDAY 3.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
0	23 34 09.42	+ 1.9635	S. 1 30 16.3	+ 9.687	0	1 10 54.71	+ 2.0833	N. 6 19 54.8	+ 5.611
1	23 36 07.28	1.9651	1 20 34.7	9.702	1	1 12 59.81	2.0867	6 29 30.8	9.589
2	23 38 05.23	1.9666	1 10 52.1	9.717	2	1 15 05.11	2.0901	6 39 05.5	9.567
3	23 40 03.27	1.9683	1 01 08.7	9.731	3	1 17 10.62	2.0937	6 48 38.8	9.543
4	23 42 01.42	1.9699	0 51 24.4	9.744	4	1 19 16.35	2.0972	6 58 10.6	9.518
5	23 43 59.66	1.9716	0 41 39.4	9.757	5	1 21 22.28	2.1007	7 07 41.0	9.493
6	23 45 58.01	1.9733	0 31 53.6	9.769	6	1 23 28.43	2.1043	7 17 09.8	9.467
7	23 47 56.46	1.9751	0 22 07.1	9.781	7	1 25 34.80	2.1079	7 26 37.0	9.440
8	23 49 55.02	1.9769	0 12 19.9	9.792	8	1 27 41.38	2.1115	7 36 02.6	9.412
9	23 51 53.69	1.9788	0 02 32.1	9.802	9	1 29 48.18	2.1152	7 45 26.4	9.383
10	23 53 52.48	1.9808	N. 0 07 16.3	9.811	10	1 31 55.21	2.1190	7 54 48.5	9.353
11	23 55 51.38	1.9827	0 17 05.2	9.819	11	1 34 02.46	2.1227	8 04 08.7	9.322
12	23 57 50.40	1.9847	0 26 54.6	9.828	12	1 36 09.93	2.1264	8 13 27.1	9.290
13	23 59 49.54	1.9868	0 36 44.5	9.835	13	1 38 17.63	2.1302	8 22 43.5	9.257
14	0 01 48.81	1.9888	0 46 34.8	9.842	14	1 40 25.55	2.1339	8 31 57.9	9.225
15	0 03 48.20	1.9909	0 56 25.5	9.848	15	1 42 33.70	2.1378	8 41 10.3	9.188
16	0 05 47.72	1.9931	1 06 16.6	9.853	16	1 44 42.09	2.1417	8 50 20.5	9.155
17	0 07 47.37	1.9953	1 16 07.9	9.858	17	1 46 50.70	2.1455	8 59 28.6	9.116
18	0 09 47.15	1.9975	1 25 59.5	9.862	18	1 48 59.55	2.1494	9 08 34.4	9.078
19	0 11 47.07	1.9998	1 35 51.3	9.864	19	1 51 08.63	2.1533	9 17 37.9	9.039
20	0 13 47.13	2.0022	1 45 43.2	9.867	20	1 53 17.95	2.1573	9 26 39.1	8.999
21	0 15 47.33	2.0045	1 55 35.3	9.868	21	1 55 27.51	2.1613	9 35 37.8	8.958
22	0 17 47.67	2.0069	2 05 27.4	9.869	22	1 57 37.31	2.1653	9 44 34.0	8.916
23	0 19 48.16	+ 2.0094	N. 2 15 19.6	+ 9.869	23	1 59 47.34	+ 2.1693	N. 9 53 27.7	+ 8.873
MONDAY 2.					WEDNESDAY 4.				
0	0 21 48.80	+ 2.0119	N. 2 25 11.7	+ 9.868	0	2 01 57.62	+ 2.1733	N. 10 02 18.8	+ 8.829
1	0 23 49.59	2.0144	2 35 03.8	9.867	1	2 04 08.14	2.1773	10 11 07.2	8.784
2	0 25 50.53	2.0170	2 44 55.8	9.865	2	2 06 18.90	2.1813	10 19 52.9	8.738
3	0 27 51.63	2.0197	2 54 47.6	9.863	3	2 08 29.90	2.1854	10 28 35.8	8.692
4	0 29 52.89	2.0223	3 04 39.3	9.859	4	2 10 41.15	2.1896	10 37 15.9	8.643
5	0 31 54.30	2.0249	3 14 30.7	9.854	5	2 12 52.65	2.1937	10 45 53.0	8.594
6	0 33 55.88	2.0277	3 24 21.8	9.848	6	2 15 04.39	2.1978	10 54 27.2	8.544
7	0 35 57.62	2.0304	3 34 12.5	9.843	7	2 17 16.38	2.2018	11 02 58.3	8.493
8	0 37 59.53	2.0333	3 44 02.9	9.836	8	2 19 28.61	2.2060	11 11 26.3	8.441
9	0 40 01.61	2.0362	3 53 52.8	9.828	9	2 21 41.10	2.2102	11 19 51.2	8.388
10	0 42 03.87	2.0390	4 03 42.3	9.820	10	2 23 53.83	2.2143	11 28 12.8	8.333
11	0 44 06.29	2.0418	4 13 31.2	9.809	11	2 26 06.81	2.2185	11 36 31.2	8.278
12	0 46 08.89	2.0448	4 23 19.4	9.799	12	2 28 20.05	2.2227	11 44 46.2	8.222
13	0 48 11.67	2.0478	4 33 07.1	9.789	13	2 30 33.54	2.2268	11 52 57.8	8.164
14	0 50 14.63	2.0509	4 42 54.1	9.777	14	2 32 47.27	2.2310	12 01 05.9	8.106
15	0 52 17.78	2.0540	4 52 40.3	9.764	15	2 35 01.26	2.2353	12 09 10.5	8.046
16	0 54 21.11	2.0571	5 02 25.8	9.751	16	2 37 15.50	2.2394	12 17 11.4	7.985
17	0 56 24.63	2.0603	5 12 10.4	9.736	17	2 39 29.99	2.2436	12 25 08.7	7.923
18	0 58 28.34	2.0634	5 21 54.1	9.721	18	2 41 44.73	2.2478	12 33 02.2	7.861
19	1 00 32.24	2.0667	5 31 36.9	9.705	19	2 43 59.72	2.2520	12 40 52.0	7.798
20	1 02 36.34	2.0699	5 41 18.7	9.688	20	2 46 14.97	2.2562	12 48 37.9	7.733
21	1 04 40.63	2.0732	5 50 59.4	9.670	21	2 48 30.47	2.2604	12 56 20.0	7.668
22	1 06 45.12	2.0765	6 00 39.1	9.651	22	2 50 46.22	2.2646	13 03 58.0	7.600
23	1 08 49.81	2.0799	6 10 17.5	9.631	23	2 53 02.22	2.2688	13 11 32.0	7.532
24	1 10 54.71	+ 2.0833	N. 6 19 54.8	+ 9.611	24	2 55 18.48	+ 2.2730	N. 13 19 01.9	+ 7.463

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
THURSDAY 5.					SATURDAY 7.				
0	2 55 18.48	+ 2.2730	N. 13 19 01.9	+ 7.463	0	4 48 49.48	+ 2.4428	N. 17 39 11.5	+ 3.037
1	2 57 34.98	2.2772	13 26 27.6	7.393	1	4 51 16.12	2.4453	17 42 10.4	2.926
2	2 59 51.74	2.2813	13 33 49.1	7.322	2	4 53 42.91	2.4476	17 45 02.6	2.813
3	3 02 08.74	2.2854	13 41 06.3	7.251	3	4 56 09.83	2.4498	17 47 48.0	2.701
4	3 04 25.99	2.2896	13 48 19.2	7.178	4	4 58 36.89	2.4521	17 50 26.7	2.588
5	3 06 43.49	2.2938	13 55 27.6	7.103	5	5 01 04.08	2.4543	17 52 58.5	2.473
6	3 09 01.24	2.2979	14 02 31.6	7.028	6	5 03 31.40	2.4563	17 55 23.5	2.359
7	3 11 19.24	2.3020	14 09 31.0	6.952	7	5 05 58.84	2.4583	17 57 41.6	2.245
8	3 13 37.48	2.3060	14 16 25.8	6.875	8	5 08 26.40	2.4603	17 59 52.9	2.130
9	3 15 55.96	2.3101	14 23 16.0	6.797	9	5 10 54.07	2.4621	18 01 57.2	2.014
10	3 18 14.69	2.3142	14 30 01.4	6.717	10	5 13 21.85	2.4638	18 03 54.6	1.898
11	3 20 33.66	2.3183	14 36 42.0	6.637	11	5 15 49.73	2.4656	18 05 45.0	1.781
12	3 22 52.88	2.3223	14 43 17.8	6.556	12	5 18 17.72	2.4673	18 07 28.3	1.664
13	3 25 12.34	2.3263	14 49 48.7	6.474	13	5 20 45.80	2.4688	18 09 04.7	1.547
14	3 27 32.03	2.3302	14 56 14.7	6.391	14	5 23 13.98	2.4703	18 10 34.0	1.429
15	3 29 51.96	2.3342	15 02 35.6	6.306	15	5 25 42.24	2.4718	18 11 56.2	1.312
16	3 32 12.13	2.3381	15 08 51.4	6.221	16	5 28 10.59	2.4732	18 13 11.4	1.194
17	3 34 32.53	2.3420	15 15 02.1	6.135	17	5 30 39.02	2.4745	18 14 19.5	1.076
18	3 36 53.17	2.3459	15 21 07.6	6.048	18	5 33 07.53	2.4757	18 15 20.5	0.957
19	3 39 14.04	2.3497	15 27 07.9	5.960	19	5 35 36.10	2.4768	18 16 14.3	0.838
20	3 41 35.13	2.3535	15 33 02.8	5.871	20	5 38 04.74	2.4778	18 17 01.0	0.719
21	3 43 56.46	2.3573	15 38 52.4	5.781	21	5 40 33.44	2.4788	18 17 40.6	0.600
22	3 46 18.01	2.3611	15 44 36.5	5.690	22	5 43 02.19	2.4797	18 18 13.0	0.480
23	3 48 39.79	+ 2.3648	N. 15 50 15.2	+ 5.598	23	5 45 31.00	+ 2.4806	N. 18 18 38.2	+ 0.360
FRIDAY 6.					SUNDAY 8.				
0	3 51 01.78	+ 2.3684	N. 15 55 48.3	+ 5.505	0	5 47 59.86	+ 2.4813	N. 18 18 56.2	+ 0.240
1	3 53 24.00	2.3721	16 01 15.8	5.412	1	5 50 28.76	2.4820	18 19 07.0	+ 0.120
2	3 55 46.43	2.3757	16 06 37.7	5.318	2	5 52 57.70	2.4826	18 19 10.6	0.000
3	3 58 09.08	2.3793	16 11 53.9	5.223	3	5 55 26.67	2.4832	18 19 07.0	- 0.120
4	4 00 31.94	2.3828	16 17 04.4	5.126	4	5 57 55.68	2.4837	18 18 56.2	0.240
5	4 02 55.01	2.3863	16 22 09.0	5.028	5	6 00 24.71	2.4840	18 18 38.2	0.360
6	4 05 18.29	2.3898	16 27 07.8	4.931	6	6 02 53.76	2.4843	18 18 13.0	0.480
7	4 07 41.78	2.3932	16 32 00.7	4.833	7	6 05 22.83	2.4846	18 17 40.6	0.601
8	4 10 05.47	2.3964	16 36 47.7	4.733	8	6 07 51.91	2.4847	18 17 00.9	0.722
9	4 12 29.35	2.3997	16 41 28.6	4.632	9	6 10 20.99	2.4848	18 16 14.0	0.842
10	4 14 53.43	2.4030	16 46 03.5	4.531	10	6 12 50.08	2.4848	18 15 19.9	0.962
11	4 17 17.71	2.4062	16 50 32.3	4.429	11	6 15 19.17	2.4847	18 14 18.6	1.083
12	4 19 42.17	2.4093	16 54 55.0	4.327	12	6 17 48.24	2.4845	18 13 10.0	1.203
13	4 22 06.83	2.4125	16 59 11.5	4.223	13	6 20 17.31	2.4844	18 11 54.3	1.322
14	4 24 31.67	2.4155	17 03 21.7	4.118	14	6 22 46.37	2.4842	18 10 31.4	1.442
15	4 26 56.69	2.4185	17 07 25.6	4.013	15	6 25 15.41	2.4838	18 09 01.3	1.562
16	4 29 21.89	2.4214	17 11 23.2	3.908	16	6 27 44.42	2.4833	18 07 24.0	1.681
17	4 31 47.26	2.4243	17 15 14.5	3.801	17	6 30 13.41	2.4828	18 05 39.6	1.800
18	4 34 12.81	2.4272	17 18 59.3	3.693	18	6 32 42.36	2.4823	18 03 48.0	1.919
19	4 36 38.52	2.4299	17 22 37.7	3.586	19	6 35 11.28	2.4816	18 01 49.3	2.038
20	4 39 04.40	2.4327	17 26 09.6	3.478	20	6 37 40.15	2.4808	17 59 43.4	2.157
21	4 41 30.44	2.4353	17 29 35.0	3.368	21	6 40 08.98	2.4802	17 57 30.5	2.274
22	4 43 56.64	2.4379	17 32 53.8	3.258	22	6 42 37.77	2.4793	17 55 10.5	2.392
23	4 46 22.99	2.4403	17 36 06.0	3.148	23	6 45 06.50	2.4783	17 52 43.4	2.511
24	4 48 49.48	+ 2.4428	N. 17 39 11.5	+ 3.037	24	6 47 35.17	+ 2.4773	N. 17 50 09.2	- 2.628

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
MONDAY 9.					WEDNESDAY 11.				
0	6 47 35.17	+ 2.4773	N. 17 50 09.2	- 2.628	0	8 44 21.81	+ 2.3735	N. 13 39 03.6	- 7.562
1	6 50 03.78	2.4763	17 47 28.0	2.745	1	8 46 44.14	2.3707	13 31 27.4	7.644
2	6 52 32.33	2.4753	17 44 39.8	2.862	2	8 49 06.29	2.3678	13 23 46.3	7.726
3	6 55 00.81	2.4741	17 41 44.6	2.978	3	8 51 28.27	2.3649	13 16 00.3	7.808
4	6 57 29.22	2.4729	17 38 42.5	3.093	4	8 53 50.08	2.3621	13 08 09.4	7.888
5	6 59 57.56	2.4716	17 35 33.4	3.209	5	8 56 11.72	2.3593	13 00 13.8	7.967
6	7 02 25.81	2.4702	17 32 17.4	3.324	6	8 58 33.19	2.3563	12 52 13.4	8.045
7	7 04 53.98	2.4688	17 28 54.5	3.438	7	9 00 54.48	2.3534	12 44 08.4	8.123
8	7 07 22.06	2.4673	17 25 24.8	3.553	8	9 03 15.60	2.3506	12 35 58.7	8.199
9	7 09 50.05	2.4658	17 21 48.2	3.667	9	9 05 36.55	2.3477	12 27 44.5	8.273
10	7 12 17.95	2.4642	17 18 04.8	3.779	10	9 07 57.32	2.3448	12 19 25.9	8.347
11	7 14 45.75	2.4625	17 14 14.7	3.891	11	9 10 17.92	2.3419	12 11 02.8	8.421
12	7 17 13.45	2.4608	17 10 17.9	4.003	12	9 12 38.35	2.3391	12 02 35.4	8.493
13	7 19 41.05	2.4591	17 06 14.3	4.115	13	9 14 58.61	2.3363	11 54 03.7	8.564
14	7 22 08.54	2.4573	17 02 04.1	4.226	14	9 17 18.70	2.3334	11 45 27.7	8.634
15	7 24 35.92	2.4554	16 57 47.2	4.337	15	9 19 38.62	2.3305	11 36 47.6	8.703
16	7 27 03.19	2.4535	16 53 23.7	4.446	16	9 21 58.36	2.3277	11 28 03.3	8.772
17	7 29 30.34	2.4515	16 48 53.7	4.554	17	9 24 17.94	2.3249	11 19 15.0	8.838
18	7 31 57.37	2.4495	16 44 17.2	4.663	18	9 26 37.35	2.3221	11 10 22.7	8.905
19	7 34 24.28	2.4475	16 39 34.1	4.772	19	9 28 56.59	2.3193	11 01 26.4	8.970
20	7 36 51.07	2.4454	16 34 44.6	4.878	20	9 31 15.67	2.3166	10 52 26.3	9.033
21	7 39 17.73	2.4433	16 29 48.7	4.985	21	9 33 34.58	2.3138	10 43 22.4	9.096
22	7 41 44.26	2.4411	16 24 46.4	5.091	22	9 35 53.32	2.3109	10 34 14.8	9.158
23	7 44 10.66	+ 2.4388	N. 16 19 37.8	- 5.195	23	9 38 11.89	+ 2.3082	N. 10 25 03.5	- 9.219
TUESDAY 10.					THURSDAY 12.				
0	7 46 36.92	+ 2.4366	N. 16 14 23.0	- 5.299	0	9 40 30.31	+ 2.3056	N. 10 15 48.5	- 9.279
1	7 49 03.05	2.4343	16 09 01.9	5.403	1	9 42 48.56	2.3028	10 06 30.0	9.337
2	7 51 29.03	2.4319	16 03 34.6	5.507	2	9 45 06.65	2.3002	9 57 08.1	9.394
3	7 53 54.88	2.4296	15 58 01.1	5.609	3	9 47 24.58	2.2974	9 47 42.7	9.451
4	7 56 20.58	2.4271	15 52 21.5	5.710	4	9 49 42.34	2.2948	9 38 14.0	9.507
5	7 58 46.13	2.4247	15 46 35.9	5.811	5	9 51 59.95	2.2923	9 28 41.9	9.562
6	8 01 11.54	2.4223	15 40 44.2	5.911	6	9 54 17.41	2.2897	9 19 06.6	9.614
7	8 03 36.80	2.4198	15 34 46.6	6.009	7	9 56 34.71	2.2870	9 09 28.2	9.666
8	8 06 01.91	2.4172	15 28 43.1	6.107	8	9 58 51.85	2.2844	8 59 46.7	9.718
9	8 08 26.86	2.4146	15 22 33.7	6.205	9	10 01 08.84	2.2819	8 50 02.1	9.768
10	8 10 51.66	2.4120	15 16 18.5	6.302	10	10 03 25.68	2.2794	8 40 14.5	9.817
11	8 13 16.30	2.4093	15 09 57.5	6.398	11	10 05 42.37	2.2769	8 30 24.0	9.865
12	8 15 40.78	2.4067	15 03 30.8	6.492	12	10 07 58.91	2.2744	8 20 30.7	9.912
13	8 18 05.11	2.4041	14 56 58.5	6.586	13	10 10 15.30	2.2720	8 10 34.6	9.958
14	8 20 29.27	2.4013	14 50 20.5	6.680	14	10 12 31.55	2.2697	8 00 35.8	10.004
15	8 22 53.27	2.3987	14 43 36.9	6.773	15	10 14 47.66	2.2673	7 50 34.4	10.045
16	8 25 17.11	2.3960	14 36 47.8	6.863	16	10 17 03.62	2.2648	7 40 30.4	10.088
17	8 27 40.79	2.3932	14 29 53.3	6.953	17	10 19 19.44	2.2625	7 30 23.8	10.130
18	8 30 04.30	2.3904	14 22 53.4	7.043	18	10 21 35.12	2.2603	7 20 14.8	10.171
19	8 32 27.64	2.3877	14 15 48.1	7.132	19	10 23 50.67	2.2580	7 10 03.3	10.211
20	8 34 50.82	2.3848	14 08 37.6	7.219	20	10 26 06.08	2.2558	6 59 49.5	10.248
21	8 37 13.82	2.3820	14 01 21.8	7.306	21	10 28 21.36	2.2535	6 49 33.5	10.285
22	8 39 36.66	2.3792	13 54 00.9	7.392	22	10 30 36.50	2.2513	6 39 15.3	10.322
23	8 41 59.32	2.3763	13 46 34.8	7.478	23	10 32 51.52	2.2492	6 28 54.9	10.358
24	8 44 21.81	+ 2.3735	N. 13 39 03.6	- 7.562	24	10 35 06.41	+ 2.2471	N. 6 18 32.4	- 10.391

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
FRIDAY 13.					SUNDAY 15.				
0	10 35 06.41	+ 2.2471	N. 6 18 32.4	-10.391	0	12 21 12.33	+ 2.1877	S. 2 19 06.8	-10.773
1	10 37 21.17	2.2450	6 08 08.0	10.423	1	12 23 23.58	2.1873	2 29 52.7	10.756
2	10 39 35.81	2.2430	5 57 41.6	10.456	2	12 25 34.81	2.1870	2 40 37.5	10.737
3	10 41 50.33	2.2410	5 47 13.3	10.487	3	12 27 46.02	2.1867	2 51 21.1	10.718
4	10 44 04.73	2.2390	5 36 43.2	10.516	4	12 29 57.21	2.1863	3 02 03.6	10.697
5	10 46 19.01	2.2370	5 26 11.4	10.544	5	12 32 08.38	2.1861	3 12 44.8	10.675
6	10 48 33.17	2.2351	5 15 37.9	10.572	6	12 34 19.54	2.1860	3 23 24.6	10.653
7	10 50 47.22	2.2333	5 05 02.7	10.599	7	12 36 30.70	2.1858	3 34 03.1	10.630
8	10 53 01.16	2.2314	4 54 26.0	10.624	8	12 38 41.84	2.1856	3 44 40.2	10.605
9	10 55 14.99	2.2297	4 43 47.8	10.649	9	12 40 52.97	2.1855	3 55 15.7	10.579
10	10 57 28.72	2.2279	4 33 08.1	10.673	10	12 43 04.10	2.1855	4 05 49.7	10.552
11	10 59 42.34	2.2261	4 22 27.1	10.694	11	12 45 15.23	2.1854	4 16 22.0	10.525
12	11 01 55.85	2.2243	4 11 44.8	10.715	12	12 47 26.35	2.1853	4 26 52.7	10.498
13	11 04 09.26	2.2227	4 01 01.3	10.735	13	12 49 37.47	2.1853	4 37 21.7	10.468
14	11 06 22.58	2.2212	3 50 16.6	10.754	14	12 51 48.59	2.1854	4 47 48.9	10.437
15	11 08 35.80	2.2195	3 39 30.8	10.772	15	12 53 59.72	2.1855	4 58 14.2	10.406
16	11 10 48.92	2.2179	3 28 43.9	10.789	16	12 56 10.85	2.1855	5 08 37.6	10.373
17	11 13 01.95	2.2164	3 17 56.1	10.804	17	12 58 21.98	2.1856	5 18 59.0	10.340
18	11 15 14.89	2.2149	3 07 07.4	10.819	18	13 00 33.12	2.1858	5 29 18.4	10.307
19	11 17 27.74	2.2135	2 56 17.8	10.833	19	13 02 44.27	2.1859	5 39 35.8	10.272
20	11 19 40.51	2.2122	2 45 27.4	10.846	20	13 04 55.43	2.1861	5 49 51.0	10.235
21	11 21 53.20	2.2108	2 34 36.3	10.858	21	13 07 06.60	2.1863	6 00 04.0	10.198
22	11 24 05.80	2.2094	2 23 44.5	10.868	22	13 09 17.79	2.1866	6 10 14.8	10.160
23	11 26 18.33	+ 2.2082	N. 2 12 52.1	-10.877	23	13 11 28.99	+ 2.1868	S. 6 20 23.2	-10.120
SATURDAY 14.					MONDAY 16.				
0	11 28 30.78	+ 2.2068	N. 2 01 59.2	-10.886	0	13 13 40.21	+ 2.1872	S. 6 30 29.2	-10.080
1	11 30 43.15	2.2057	1 51 05.8	10.893	1	13 15 51.45	2.1874	6 40 32.8	10.040
2	11 32 55.46	2.2045	1 40 12.1	10.898	2	13 18 02.70	2.1877	6 50 34.0	9.998
3	11 35 07.69	2.2033	1 29 18.0	10.904	3	13 20 13.97	2.1880	7 00 32.6	9.956
4	11 37 19.86	2.2022	1 18 23.6	10.908	4	13 22 25.26	2.1884	7 10 28.7	9.913
5	11 39 31.96	2.2011	1 07 29.0	10.912	5	13 24 36.58	2.1888	7 20 22.1	9.868
6	11 41 43.99	2.2001	0 56 34.2	10.914	6	13 26 47.92	2.1893	7 30 12.8	9.823
7	11 43 55.97	2.1992	0 45 39.3	10.915	7	13 28 59.29	2.1897	7 40 00.8	9.777
8	11 46 07.89	2.1982	0 34 44.4	10.914	8	13 31 10.68	2.1901	7 49 46.0	9.729
9	11 48 19.75	2.1972	0 23 49.6	10.913	9	13 33 22.10	2.1905	7 59 28.3	9.681
10	11 50 31.55	2.1963	0 12 54.8	10.912	10	13 35 33.54	2.1910	8 09 07.7	9.632
11	11 52 43.31	2.1955	N. 0 02 00.2	10.908	11	13 37 45.02	2.1915	8 18 44.1	9.582
12	11 54 55.01	2.1946	S. 0 08 54.2	10.904	12	13 39 56.52	2.1919	8 28 17.5	9.532
13	11 57 06.66	2.1938	0 19 48.3	10.898	13	13 42 08.05	2.1925	8 37 47.9	9.480
14	11 59 18.27	2.1932	0 30 42.0	10.892	14	13 44 19.62	2.1931	8 47 15.1	9.427
15	12 01 29.84	2.1924	0 41 35.3	10.885	15	13 46 31.22	2.1936	8 56 39.1	9.373
16	12 03 41.36	2.1918	0 52 28.2	10.878	16	13 48 42.85	2.1941	9 05 59.9	9.320
17	12 05 52.85	2.1912	1 03 20.6	10.868	17	13 50 54.51	2.1946	9 15 17.5	9.265
18	12 08 04.30	2.1905	1 14 12.3	10.857	18	13 53 06.20	2.1952	9 24 31.7	9.209
19	12 10 15.71	2.1899	1 25 03.4	10.845	19	13 55 17.93	2.1958	9 33 42.6	9.153
20	12 12 27.09	2.1894	1 35 53.7	10.833	20	13 57 29.70	2.1964	9 42 50.0	9.095
21	12 14 38.44	2.1889	1 46 43.3	10.820	21	13 59 41.50	2.1970	9 51 54.0	9.037
22	12 16 49.76	2.1885	1 57 32.1	10.805	22	14 01 53.34	2.1976	10 00 54.4	8.977
23	12 19 01.06	2.1881	2 08 19.9	10.789	23	14 04 05.21	2.1983	10 09 51.2	8.917
24	12 21 12.33	+ 2.1877	S. 2 19 06.8	-10.773	24	14 06 17.13	+ 2.1989	S. 10 18 44.4	- 8.857

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
TUESDAY 17.					THURSDAY 19.				
0	14 06 17.13	+ 2.1989	S. 10 18 44.4	- 8.857	0	15 52 29.16	+ 2.2214	S. 16 00 28.0	- 5.153
1	14 08 29.08	2.1995	10 27 34.0	8.795	1	15 54 42.45	2.2215	16 05 34.5	5.063
2	14 10 41.07	2.2002	10 36 19.8	8.733	2	15 56 55.74	2.2214	16 10 35.6	4.973
3	14 12 53.10	2.2008	10 45 01.9	8.669	3	15 59 09.02	2.2214	16 15 31.3	4.883
4	14 15 05.16	2.2013	10 53 40.1	8.605	4	16 01 22.31	2.2214	16 20 21.5	4.792
5	14 17 17.26	2.2020	11 02 14.5	8.541	5	16 03 35.59	2.2213	16 25 06.3	4.701
6	14 19 29.40	2.2027	11 10 45.0	8.476	6	16 05 48.86	2.2212	16 29 45.6	4.610
7	14 21 41.58	2.2033	11 19 11.6	8.410	7	16 08 02.13	2.2211	16 34 19.5	4.518
8	14 23 53.80	2.2040	11 27 34.2	8.342	8	16 10 15.39	2.2209	16 38 47.8	4.426
9	14 26 06.06	2.2047	11 35 52.7	8.274	9	16 12 28.64	2.2207	16 43 10.6	4.334
10	14 28 18.36	2.2053	11 44 07.1	8.206	10	16 14 41.87	2.2204	16 47 27.9	4.242
11	14 30 30.69	2.2058	11 52 17.4	8.137	11	16 16 55.09	2.2201	16 51 39.7	4.150
12	14 32 43.06	2.2065	12 00 23.6	8.067	12	16 19 08.28	2.2198	16 55 45.9	4.057
13	14 34 55.47	2.2072	12 08 25.5	7.997	13	16 21 21.46	2.2195	16 59 46.5	3.963
14	14 37 07.92	2.2078	12 16 23.2	7.926	14	16 23 34.62	2.2191	17 03 41.5	3.870
15	14 39 20.41	2.2084	12 24 16.6	7.854	15	16 25 47.75	2.2187	17 07 30.9	3.777
16	14 41 32.93	2.2090	12 32 05.7	7.781	16	16 28 00.86	2.2183	17 11 14.7	3.683
17	14 43 45.49	2.2097	12 39 50.3	7.708	17	16 30 13.94	2.2178	17 14 52.9	3.589
18	14 45 58.09	2.2103	12 47 30.6	7.634	18	16 32 27.00	2.2173	17 18 25.4	3.495
19	14 48 10.73	2.2109	12 55 06.4	7.559	19	16 34 40.02	2.2168	17 21 52.3	3.401
20	14 50 23.40	2.2114	13 02 37.7	7.484	20	16 36 53.01	2.2164	17 25 13.5	3.307
21	14 52 36.10	2.2120	13 10 04.5	7.408	21	16 39 05.96	2.2156	17 28 29.1	3.213
22	14 54 48.84	2.2126	13 17 26.7	7.332	22	16 41 18.88	2.2150	17 31 39.0	3.118
23	14 57 01.61	+ 2.2132	S. 13 24 44.3	- 7.254	23	16 43 31.76	+ 2.2143	S. 17 34 43.2	- 3.023
WEDNESDAY 18.					FRIDAY 20.				
0	14 59 14.42	+ 2.2138	S. 13 31 57.2	- 7.177	0	16 45 44.59	+ 2.2135	S. 17 37 41.8	- 2.929
1	15 01 27.26	2.2143	13 39 05.5	7.098	1	16 47 57.38	2.2128	17 40 34.7	2.834
2	15 03 40.13	2.2148	13 46 09.0	7.019	2	16 50 10.13	2.2121	17 43 21.9	2.739
3	15 05 53.03	2.2153	13 53 07.8	6.940	3	16 52 22.83	2.2112	17 46 03.4	2.644
4	15 08 05.96	2.2158	14 00 01.8	6.860	4	16 54 35.47	2.2103	17 48 39.2	2.549
5	15 10 18.92	2.2163	14 06 51.0	6.779	5	16 56 48.07	2.2095	17 51 09.3	2.454
6	15 12 31.91	2.2168	14 13 35.3	6.698	6	16 59 00.61	2.2085	17 53 33.7	2.359
7	15 14 44.93	2.2172	14 20 14.7	6.616	7	17 01 13.09	2.2075	17 55 52.4	2.264
8	15 16 57.97	2.2175	14 26 49.2	6.533	8	17 03 25.51	2.2066	17 58 05.4	2.169
9	15 19 11.03	2.2179	14 33 18.7	6.451	9	17 05 37.88	2.2056	18 00 12.7	2.074
10	15 21 24.12	2.2183	14 39 43.3	6.368	10	17 07 50.18	2.2045	18 02 14.3	1.979
11	15 23 37.23	2.2188	14 46 02.9	6.284	11	17 10 02.42	2.2033	18 04 10.2	1.883
12	15 25 50.37	2.2191	14 52 17.4	6.200	12	17 12 14.58	2.2022	18 06 00.3	1.788
13	15 28 03.52	2.2194	14 58 26.9	6.115	13	17 14 26.68	2.2011	18 07 44.8	1.694
14	15 30 16.70	2.2198	15 04 31.2	6.029	14	17 16 38.71	2.1998	18 09 23.6	1.599
15	15 32 29.89	2.2200	15 10 30.4	5.943	15	17 18 50.66	2.1986	18 10 56.7	1.505
16	15 34 43.10	2.2202	15 16 24.4	5.857	16	17 21 02.54	2.1973	18 12 24.2	1.410
17	15 36 56.32	2.2204	15 22 13.3	5.771	17	17 23 14.34	2.1960	18 13 45.9	1.315
18	15 39 09.55	2.2207	15 27 56.9	5.683	18	17 25 26.06	2.1947	18 15 02.0	1.221
19	15 41 22.80	2.2209	15 33 35.3	5.596	19	17 27 37.70	2.1933	18 16 12.4	1.127
20	15 43 36.06	2.2210	15 39 08.4	5.508	20	17 29 49.25	2.1918	18 17 17.2	1.033
21	15 45 49.32	2.2212	15 44 36.3	5.421	21	17 32 00.72	2.1904	18 18 16.3	0.938
22	15 48 02.60	2.2213	15 49 58.9	5.332	22	17 34 12.10	2.1889	18 19 09.8	0.844
23	15 50 15.88	2.2213	15 55 16.1	5.243	23	17 36 23.39	2.1874	18 19 57.6	0.750
24	15 52 29.16	+ 2.2214	S. 16 00 28.0	- 5.153	24	17 38 34.59	+ 2.1859	S. 18 20 39.8	- 0.657

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
SATURDAY 21.					MONDAY 23.				
0	h m s		° ' "	"	0	h m s		° ' "	"
1	17 38 34.59	+ 2.1859	S. 18 20 39.8	- 0.657	1	19 21 11.98	+ 2.0823	S. 17 09 05.4	+ 3.508
2	17 40 45.70	2.1843	18 21 16.4	0.563	2	19 23 16.85	2.0798	17 05 32.6	3.586
3	17 42 56.71	2.1827	18 21 47.4	0.469	3	19 25 21.56	2.0773	17 01 55.1	3.663
4	17 45 07.62	2.1810	18 22 12.7	0.376	4	19 27 26.12	2.0748	16 58 13.0	3.740
5	17 47 18.43	2.1793	18 22 32.5	0.283	5	19 29 30.53	2.0723	16 54 26.3	3.816
6	17 49 29.14	2.1777	18 22 46.7	0.191	6	19 31 34.79	2.0698	16 50 35.1	3.892
7	17 51 39.75	2.1759	18 22 55.4	0.098	7	19 33 38.90	2.0672	16 46 39.3	3.967
8	17 53 50.25	2.1741	18 22 58.5	- 0.005	8	19 35 42.85	2.0646	16 42 39.1	4.041
9	17 56 00.64	2.1723	18 22 56.0	+ 0.087	9	19 37 46.65	2.0621	16 38 34.4	4.116
10	17 58 10.93	2.1706	18 22 48.1	0.178	10	19 39 50.30	2.0596	16 34 25.2	4.189
11	18 00 21.11	2.1687	18 22 34.6	0.271	11	19 41 53.80	2.0571	16 30 11.7	4.262
12	18 02 31.17	2.1668	18 22 15.6	0.362	12	19 43 57.15	2.0546	16 25 53.8	4.336
13	18 04 41.12	2.1648	18 21 51.2	0.453	13	19 46 00.35	2.0521	16 21 31.4	4.409
14	18 06 50.95	2.1629	18 21 21.3	0.543	14	19 48 03.40	2.0495	16 17 04.7	4.480
15	18 09 00.67	2.1610	18 20 46.0	0.634	15	19 50 06.29	2.0469	16 12 33.8	4.551
16	18 11 10.27	2.1590	18 20 05.2	0.725	16	19 52 09.03	2.0444	16 07 58.6	4.622
17	18 13 19.75	2.1569	18 19 19.0	0.815	17	19 54 11.62	2.0420	16 03 19.2	4.693
18	18 15 29.10	2.1548	18 18 27.4	0.904	18	19 56 14.07	2.0396	15 58 35.5	4.763
19	18 17 38.33	2.1528	18 17 30.5	0.993	19	19 58 16.37	2.0370	15 53 47.6	4.832
20	18 19 47.44	2.1508	18 16 28.2	1.083	20	20 00 18.51	2.0345	15 48 55.6	4.901
21	18 21 56.43	2.1487	18 15 20.5	1.172	21	20 02 20.51	2.0321	15 43 59.5	4.970
22	18 24 05.28	2.1466	18 14 07.5	1.260	22	20 04 22.36	2.0296	15 38 59.2	5.038
23	18 26 14.00	2.1443	18 12 49.3	1.348	23	20 06 24.06	2.0272	15 33 54.9	5.106
24	18 28 22.60	+ 2.1422	S. 18 11 25.7	+ 1.437	24	20 08 25.62	+ 2.0248	S. 15 28 46.5	+ 5.173
SUNDAY 22.					TUESDAY 24.				
0	h m s		° ' "	"	0	h m s		° ' "	"
1	18 30 31.06	+ 2.1399	S. 18 09 56.9	+ 1.524	1	20 10 27.03	+ 2.0223	S. 15 23 34.1	+ 5.240
2	18 32 39.39	2.1377	18 08 22.8	1.612	2	20 12 28.30	2.0199	15 18 17.7	5.306
3	18 34 47.59	2.1355	18 06 43.5	1.698	3	20 14 29.42	2.0175	15 12 57.4	5.372
4	18 36 55.65	2.1332	18 04 59.0	1.784	4	20 16 30.40	2.0151	15 07 33.1	5.438
5	18 39 03.57	2.1309	18 03 09.4	1.870	5	20 18 31.23	2.0127	15 02 04.9	5.502
6	18 41 11.36	2.1287	18 01 14.6	1.957	6	20 20 31.92	2.0104	14 56 32.9	5.566
7	18 43 19.01	2.1263	17 59 14.6	2.042	7	20 22 32.48	2.0081	14 50 57.0	5.630
8	18 45 26.51	2.1239	17 57 09.6	2.126	8	20 24 32.89	2.0057	14 45 17.3	5.693
9	18 47 33.88	2.1217	17 54 59.5	2.211	9	20 26 33.16	2.0034	14 39 33.8	5.756
10	18 49 41.11	2.1193	17 52 44.3	2.295	10	20 28 33.30	2.0012	14 33 46.6	5.817
11	18 51 48.19	2.1168	17 50 24.1	2.379	11	20 30 33.30	1.9989	14 27 55.7	5.879
12	18 53 55.13	2.1144	17 47 58.8	2.463	12	20 32 33.17	1.9967	14 22 01.1	5.941
13	18 56 01.92	2.1120	17 45 28.6	2.545	13	20 34 32.90	1.9944	14 16 02.8	6.002
14	18 58 08.57	2.1097	17 42 53.4	2.628	14	20 36 32.50	1.9922	14 10 00.9	6.063
15	19 00 15.08	2.1073	17 40 13.3	2.710	15	20 38 31.96	1.9900	14 03 55.3	6.123
16	19 02 21.44	2.1048	17 37 28.2	2.792	16	20 40 31.30	1.9878	13 57 46.2	6.182
17	19 04 27.65	2.1023	17 34 38.2	2.873	17	20 42 30.50	1.9857	13 51 33.5	6.241
18	19 06 33.71	2.0998	17 31 43.4	2.954	18	20 44 29.58	1.9836	13 45 17.3	6.299
19	19 08 39.63	2.0973	17 28 43.7	3.035	19	20 46 28.53	1.9815	13 38 57.6	6.357
20	19 10 45.39	2.0948	17 25 39.2	3.115	20	20 48 27.36	1.9794	13 32 34.4	6.415
21	19 12 51.01	2.0924	17 22 29.9	3.194	21	20 50 26.06	1.9773	13 26 07.8	6.472
22	19 14 56.48	2.0899	17 19 15.9	3.273	22	20 52 24.64	1.9753	13 19 37.8	6.528
23	19 17 01.80	2.0874	17 15 57.1	3.352	23	20 54 23.09	1.9733	13 13 04.4	6.585
24	19 19 06.97	2.0848	17 12 33.6	3.431	24	20 56 21.43	1.9713	13 06 27.6	6.641
25	19 21 11.98	+ 2.0823	S. 17 09 05.4	+ 3.508	25	20 58 19.65	+ 1.9693	S. 12 59 47.5	+ 6.696

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.			Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.			Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.		
WEDNESDAY 25.							FRIDAY 27.								
0	h	m	s		°	'	0	h	m	s		°	'		
0	20	58	19.65	+ 1.9693	S. 12	59 47.5	+ 6.696	0	22	31	12.99	+ 1.9153	S. 6	43 47.9	+ 8.792
1	21	00	17.75	1.9674	12	53 04.1	6.750	1	22	33	07.90	1.9151	6	34 59.4	8.824
2	21	02	15.74	1.9656	12	46 17.5	6.804	2	22	35	02.80	1.9149	6	26 09.0	8.856
3	21	04	13.62	1.9638	12	39 27.6	6.858	3	22	36	57.69	1.9148	6	17 16.7	8.888
4	21	06	11.39	1.9618	12	32 34.5	6.912	4	22	38	52.58	1.9149	6	08 22.6	8.918
5	21	08	09.04	1.9600	12	25 38.2	6.964	5	22	40	47.48	1.9149	5	59 26.6	8.948
6	21	10	06.59	1.9583	12	18 38.8	7.017	6	22	42	42.37	1.9150	5	50 28.8	8.978
7	21	12	04.03	1.9565	12	11 36.2	7.068	7	22	44	37.28	1.9152	5	41 29.2	9.008
8	21	14	01.37	1.9548	12	04 30.6	7.119	8	22	46	32.19	1.9153	5	32 27.9	9.036
9	21	15	58.60	1.9530	11	57 21.9	7.171	9	22	48	27.11	1.9155	5	23 24.9	9.064
10	21	17	55.73	1.9514	11	50 10.1	7.222	10	22	50	22.05	1.9158	5	14 20.2	9.092
11	21	19	52.77	1.9498	11	42 55.3	7.271	11	22	52	17.00	1.9161	5	05 13.8	9.120
12	21	21	49.71	1.9482	11	35 37.6	7.320	12	22	54	11.98	1.9165	4	56 05.8	9.147
13	21	23	46.55	1.9466	11	28 16.9	7.369	13	22	56	06.98	1.9168	4	46 56.2	9.173
14	21	25	43.30	1.9451	11	20 53.3	7.418	14	22	58	02.00	1.9172	4	37 45.0	9.199
15	21	27	39.96	1.9436	11	13 26.7	7.467	15	22	59	57.05	1.9178	4	28 32.3	9.225
16	21	29	36.53	1.9421	11	05 57.3	7.513	16	23	01	52.13	1.9183	4	19 18.0	9.250
17	21	31	33.01	1.9407	10	58 25.1	7.561	17	23	03	47.25	1.9190	4	10 02.3	9.274
18	21	33	29.41	1.9393	10	50 50.0	7.608	18	23	05	42.41	1.9196	4	00 45.1	9.298
19	21	35	25.73	1.9379	10	43 12.2	7.653	19	23	07	37.60	1.9203	3	51 26.5	9.322
20	21	37	21.96	1.9366	10	35 31.6	7.699	20	23	09	32.84	1.9210	3	42 06.5	9.344
21	21	39	18.12	1.9353	10	27 48.3	7.745	21	23	11	28.12	1.9218	3	32 45.2	9.367
22	21	41	14.20	1.9340	10	20 02.2	7.790	22	23	13	23.45	1.9226	3	23 22.5	9.389
23	21	43	10.20	+ 1.9328	S. 10	12 13.5	+ 7.833	23	23	15	18.83	+ 1.9235	S. 3	13 58.5	+ 9.410
THURSDAY 26.							SATURDAY 28.								
0	21	45	06.13	+ 1.9316	S. 10	04 22.2	+ 7.877	0	23	17	14.27	+ 1.9244	S. 3	04 33.3	+ 9.431
1	21	47	01.99	1.9305	9	56 28.2	7.922	1	23	19	09.76	1.9254	2	55 06.8	9.452
2	21	48	57.79	1.9294	9	48 31.6	7.964	2	23	21	05.32	1.9265	2	45 39.1	9.471
3	21	50	53.52	1.9283	9	40 32.5	8.007	3	23	23	00.94	1.9276	2	36 10.3	9.490
4	21	52	49.19	1.9273	9	32 30.8	8.048	4	23	24	56.63	1.9288	2	26 40.3	9.509
5	21	54	44.79	1.9263	9	24 26.7	8.090	5	23	26	52.39	1.9299	2	17 09.2	9.528
6	21	56	40.34	1.9253	9	16 20.0	8.132	6	23	28	48.22	1.9311	2	07 37.0	9.545
7	21	58	35.83	1.9244	9	08 10.9	8.172	7	23	30	44.12	1.9324	1	58 03.8	9.563
8	22	00	31.27	1.9235	8	59 59.4	8.212	8	23	32	40.11	1.9338	1	48 29.5	9.579
9	22	02	26.65	1.9227	8	51 45.5	8.252	9	23	34	36.17	1.9351	1	38 54.3	9.594
10	22	04	21.99	1.9219	8	43 29.2	8.291	10	23	36	32.32	1.9366	1	29 18.2	9.610
11	22	06	17.28	1.9212	8	35 10.6	8.330	11	23	38	28.56	1.9381	1	19 41.1	9.625
12	22	08	12.53	1.9205	8	26 49.6	8.368	12	23	40	24.89	1.9396	1	10 03.2	9.639
13	22	10	07.74	1.9198	8	18 26.6	8.406	13	23	42	21.31	1.9412	1	00 24.4	9.653
14	22	12	02.90	1.9191	8	10 00.9	8.444	14	23	44	17.83	1.9428	0	50 44.8	9.666
15	22	13	58.03	1.9186	8	01 33.1	8.481	15	23	46	14.45	1.9445	0	41 04.5	9.678
16	22	15	53.13	1.9180	7	53 03.2	8.517	16	23	48	11.17	1.9463	0	31 23.4	9.691
17	22	17	48.19	1.9175	7	44 31.1	8.553	17	23	50	08.00	1.9481	0	21 41.6	9.703
18	22	19	43.23	1.9171	7	35 56.8	8.588	18	23	52	04.94	1.9499	0	11 59.1	9.713
19	22	21	38.24	1.9166	7	27 20.5	8.623	19	23	54	01.99	1.9518	S. 0	02 16.0	9.723
20	22	23	33.22	1.9163	7	18 42.0	8.658	20	23	55	59.16	1.9538	N. 0	07 27.7	9.733
21	22	25	28.19	1.9160	7	10 01.5	8.692	21	23	57	56.44	1.9558	0	17 12.0	9.742
22	22	27	23.14	1.9157	7	01 19.0	8.726	22	23	59	53.85	1.9578	0	26 56.7	9.750
23	22	29	18.07	1.9154	6	52 34.4	8.759	23	0	01	51.38	1.9598	0	36 42.0	9.758
24	22	31	12.99	+ 1.9153	S. 6	43 47.9	+ 8.792	24	0	03	49.03	+ 1.9619	N. 0	46 27.7	+ 9.765

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.					
SUNDAY 29.					TUESDAY, DECEMBER 1.									
0	h m s 0 03 49.03	+ 1.9619	N. 0 46 27.7	+ 9.765	0	h m s 1 41 24.72	+ 2.1224	N. 8 30 06.9	+ 9.250					
1	0 05 46.81	1.9642	0 56 13.8	9.772	PHASES OF THE MOON.									
2	0 07 44.73	1.9665	1 06 00.3	9.778										
3	0 09 42.79	1.9688	1 15 47.2	9.783										
4	0 11 40.99	1.9712	1 25 34.3	9.788										
5	0 13 39.33	1.9735	1 35 21.7	9.792										
6	0 15 37.81	1.9759	1 45 09.3	9.795										
7	0 17 36.44	1.9785	1 54 57.1	9.798										
8	0 19 35.23	1.9811	2 04 45.0	9.799										
9	0 21 34.17	1.9837	2 14 33.0	9.801										
10	0 23 33.27	1.9863	2 24 21.1	9.802										
11	0 25 32.52	1.9889	2 34 09.2	9.801	☉ Full Moon Nov. 4 17 27.5 ☾ Last Quarter 11 14 45.8 ● New Moon 18 17 10.0 ☾ First Quarter 26 17 36.6									
12	0 27 31.94	1.9917	2 43 57.2	9.800										
13	0 29 31.53	1.9946	2 53 45.2	9.799										
14	0 31 31.29	1.9974	3 03 33.1	9.797										
15	0 33 31.22	2.0003	3 13 20.8	9.794										
16	0 35 31.33	2.0033	3 23 08.4	9.791										
17	0 37 31.61	2.0063	3 32 55.7	9.787										
18	0 39 32.08	2.0094	3 42 42.8	9.782										
19	0 41 32.74	2.0125	3 52 29.5	9.775										
20	0 43 33.58	2.0156	4 02 15.8	9.768						☾ Perigee Nov. 10 01.8 ☾ Apogee 25 03.0				
21	0 45 34.61	2.0188	4 12 01.7	9.762										
22	0 47 35.84	2.0221	4 21 47.2	9.753										
23	0 49 37.26	+ 2.0253	N. 4 31 32.1	+ 9.744										
MONDAY 30.														
0	0 51 38.88	+ 2.0287	N. 4 41 16.5	+ 9.735										
1	0 53 40.70	2.0321	4 51 00.3	9.724										
2	0 55 42.73	2.0356	5 00 43.4	9.713										
3	0 57 44.97	2.0391	5 10 25.9	9.702										
4	0 59 47.42	2.0426	5 20 07.6	9.688										
5	1 01 50.08	2.0461	5 29 48.5	9.674										
6	1 03 52.95	2.0497	5 39 28.5	9.660										
7	1 05 56.04	2.0534	5 49 07.7	9.646										
8	1 07 59.36	2.0572	5 58 46.0	9.629										
9	1 10 02.90	2.0609	6 08 23.2	9.612										
10	1 12 06.67	2.0647	6 17 59.4	9.594										
11	1 14 10.67	2.0686	6 27 34.5	9.575										
12	1 16 14.90	2.0725	6 37 08.4	9.556										
13	1 18 19.37	2.0764	6 46 41.2	9.536										
14	1 20 24.07	2.0803	6 56 12.7	9.514										
15	1 22 29.01	2.0844	7 05 42.9	9.492										
16	1 24 34.20	2.0885	7 15 11.7	9.468										
17	1 26 39.63	2.0926	7 24 39.1	9.445										
18	1 28 45.31	2.0967	7 34 05.1	9.420										
19	1 30 51.24	2.1009	7 43 29.5	9.394										
20	1 32 57.42	2.1052	7 52 52.4	9.368										
21	1 35 03.86	2.1094	8 02 13.6	9.340										
22	1 37 10.55	2.1137	8 11 33.2	9.312										
23	1 39 17.51	2.1181	8 20 51.0	9.281										
24	1 41 24.72	+ 2.1224	N. 8 30 06.9	+ 9.250										

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.	Noon.	P. L. of Diff.	III ^h	P. L. of Diff.	VI ^h	P. L. of Diff.	IX ^h	P. L. of Diff.
1	<i>α</i> Aquilæ W.	57 42 58	3450	59 04 18	3420	60 26 12	3391	61 48 39	3361
	SATURN W.	50 19 47	2908	51 51 56	2895	53 24 21	2881	54 57 04	2867
	Aldebaran E.	75 10 01	2863	73 36 55	2851	72 03 33	2839	70 29 56	2826
	Pollux E.	118 02 39	2978	116 31 59	2964	115 01 01	2949	113 29 44	2933
2	<i>α</i> Aquilæ W.	68 48 42	3235	70 14 10	3213	71 40 04	3191	73 06 24	3169
	SATURN W.	62 45 03	2799	64 19 32	2785	65 54 20	2771	67 29 26	2757
	Fomalhaut W.	38 55 54	3898	40 09 17	3812	41 24 07	3732	42 40 20	3660
	JUPITER W.	22 30 23	2803	24 04 47	2785	25 39 34	2767	27 14 45	2750
	Aldebaran E.	49 37 39	2762	61 02 21	2749	59 26 46	2735	57 50 53	2722
	Pollux E.	105 48 30	2859	104 15 18	2845	102 41 48	2830	101 07 59	2815
3	<i>α</i> Aquilæ W.	80 24 03	3077	81 52 41	3060	83 21 40	3044	84 50 58	3029
	SATURN W.	75 29 27	2689	77 06 21	2675	78 43 34	2662	80 21 05	2649
	Fomalhaut W.	49 19 09	3372	50 41 58	3325	52 05 40	3282	53 30 12	3242
	JUPITER W.	35 16 10	2670	36 53 30	2656	38 31 09	2641	40 09 08	2627
	<i>α</i> Pegasi W.	33 12 19	3455	34 33 33	3379	35 56 13	3311	37 20 12	3247
	Aldebaran E.	49 47 00	2655	48 09 20	2643	46 31 23	2629	44 53 08	2616
	Pollux E.	93 14 16	2746	91 38 37	2732	90 02 40	2719	88 26 26	2706
4	<i>α</i> Aquilæ W.	92 21 52	2965	93 52 49	2951	95 24 00	2945	96 55 22	2935
	SATURN W.	88 33 02	2585	90 12 17	2573	91 51 49	2561	93 31 37	2549
	Fomalhaut W.	60 43 53	3074	62 12 34	3047	63 41 49	3019	65 11 38	2994
	JUPITER W.	48 23 45	2560	50 03 35	2548	51 43 42	2535	53 24 07	2522
	<i>α</i> Pegasi W.	44 36 39	3009	46 06 41	2971	47 37 30	2937	49 09 02	2905
	Aldebaran E.	36 37 30	2553	34 57 31	2541	33 17 15	2530	31 36 43	2518
	Pollux E.	80 21 03	2646	78 43 10	2635	77 05 03	2624	75 26 41	2613
	Regulus E.	116 36 34	2561	114 56 49	2551	113 16 46	2538	111 36 25	2526
5	<i>α</i> Aquilæ W.	104 34 37	2907	106 06 47	2901	107 39 01	2903	109 11 16	2903
	SATURN W.	101 54 35	2495	103 35 55	2485	105 17 29	2475	106 59 17	2466
	Fomalhaut W.	72 47 57	2889	74 20 30	2872	75 53 25	2855	77 26 41	2840
	JUPITER W.	61 50 18	2466	63 32 19	2455	65 14 35	2445	66 57 05	2436
	<i>α</i> Pegasi W.	56 56 04	2775	58 31 05	2753	60 06 35	2732	61 42 32	2713
	Pollux E.	67 11 31	2569	65 31 54	2561	63 52 06	2556	62 12 10	2549
	Regulus E.	103 10 40	2470	101 28 44	2460	99 46 34	2449	98 04 09	2440
6	SATURN W.	115 31 24	2421	117 14 24	2417	118 57 34	2410	120 40 54	2404
	Fomalhaut W.	85 17 31	2779	86 52 26	2769	88 27 34	2761	90 02 53	2751
	JUPITER W.	75 32 57	2391	77 16 45	2385	79 00 44	2375	80 44 54	2368
	<i>α</i> Pegasi W.	69 48 08	2635	71 26 16	2622	73 04 41	2610	74 43 23	2599
	<i>α</i> Arietis W.	26 39 29	2927	28 11 09	2895	29 44 15	2868	31 18 33	2760
	Pollux E.	53 50 40	2530	52 10 08	2530	50 29 36	2529	48 49 03	2530
	Regulus E.	89 28 46	2395	87 45 04	2387	86 01 11	2380	84 17 07	2371
	VENUS E.	119 10 52	2649	117 32 51	2632	115 54 39	2624	114 16 17	2615
7	Fomalhaut W.	98 01 24	2732	99 37 21	2732	101 13 18	2732	102 49 16	2732
	JUPITER W.	89 28 09	2337	91 13 15	2333	92 58 27	2327	94 43 47	2322
	<i>α</i> Pegasi W.	83 00 20	2554	84 40 18	2548	86 20 24	2542	88 00 39	2537
	<i>α</i> Arietis W.	39 23 45	2592	41 02 51	2569	42 42 29	2548	44 22 35	2530
	Regulus E.	75 34 21	2342	73 49 22	2336	72 04 15	2331	70 19 01	2326
	VENUS E.	106 02 13	2587	104 23 00	2583	102 43 41	2577	101 04 15	2572

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.	Midnight.	P. L. of Diff.	XVh	P. L. of Diff.	XVIIIh	P. L. of Diff.	XXIh	P. L. of Diff.
		° ' "		° ' "		° ' "		° ' "	
1	α Aquilæ W.	63 11 38	3335	64 35 09	3308	65 59 11	3283	67 23 42	3259
	SATURN W.	56 30 05	2854	58 03 23	2841	59 36 58	2827	61 10 51	2812
	Aldebaran E.	68 56 02	2813	67 21 51	2801	65 47 24	2788	64 12 40	2775
	Pollux E.	111 58 07	2918	110 26 11	2904	108 53 57	2888	107 21 23	2873
2	α Aquilæ W.	74 33 10	3150	76 00 19	3131	77 27 51	3112	78 55 46	3094
	SATURN W.	69 04 50	2744	70 40 32	2730	72 16 32	2716	73 52 50	2702
	Fomalhaut W.	43 57 50	3593	45 16 32	3531	46 36 22	3473	47 57 16	3421
	JUPITER W.	28 50 18	2733	30 26 14	2717	32 02 31	2701	33 39 10	2685
	Aldebaran E.	56 14 42	2708	54 38 13	2695	53 01 27	2681	51 24 22	2669
	Pollux E.	99 33 51	2801	97 59 25	2787	96 24 40	2773	94 49 37	2760
3	α Aquilæ W.	86 20 35	3014	87 50 30	3001	89 20 41	2988	90 51 09	2976
	SATURN W.	81 58 53	2636	83 36 59	2623	85 15 23	2610	86 54 04	2598
	Fomalhaut W.	54 55 31	3204	56 21 35	3169	57 48 21	3135	59 15 48	3104
	JUPITER W.	41 47 26	2613	43 26 03	2599	45 04 59	2586	46 44 13	2573
	α Pegasi W.	38 45 25	3191	40 11 45	3140	41 39 06	3091	43 07 26	3048
	Aldebaran E.	43 14 35	2604	41 35 45	2591	39 56 37	2578	38 17 12	2566
	Pollux E.	86 49 54	2694	85 13 06	2681	83 36 01	2669	81 58 40	2657
4	α Aquilæ W.	98 26 56	2927	99 58 40	2921	101 30 32	2916	103 02 31	2910
	SATURN W.	95 11 42	2538	96 52 03	2527	98 32 38	2516	100 13 29	2505
	Fomalhaut W.	66 41 58	2971	68 12 47	2949	69 44 04	2927	71 15 48	2908
	JUPITER W.	55 04 49	2511	56 45 47	2499	58 27 02	2488	60 08 32	2477
	α Pegasi W.	50 41 15	2875	52 14 06	2848	53 47 32	2821	55 21 32	2797
	Aldebaran E.	29 55 55	2507	28 14 51	2496	26 33 32	2485	24 51 58	2474
	Pollux E.	73 48 04	2604	72 09 14	2595	70 30 12	2585	68 50 57	2577
	Regulus E.	109 55 48	2515	108 14 55	2503	106 33 46	2492	104 52 21	2480
5	α Aquilæ W.	110 43 31	2905	112 15 44	2907	113 47 54	2912	115 19 58	2918
	SATURN W.	108 41 18	2458	110 23 31	2448	112 05 57	2440	113 48 35	2432
	Fomalhaut W.	79 00 17	2826	80 34 11	2813	82 08 22	2801	83 42 49	2789
	JUPITER W.	68 39 49	2426	70 22 47	2417	72 05 57	2408	73 49 21	2399
	α Pegasi W.	63 18 55	2695	64 55 41	2679	66 32 49	2663	68 10 19	2649
	Pollux E.	60 32 05	2543	58 51 52	2539	57 11 33	2535	55 31 09	2532
	Regulus E.	96 21 31	2430	94 38 39	2421	92 55 34	2412	91 12 16	2403
6	SATURN W.	122 24 23	2398	124 08 00	2393	125 51 45	2388	127 35 37	2383
	Fomalhaut W.	91 38 21	2747	93 13 58	2743	94 49 41	2738	96 25 30	2735
	JUPITER W.	82 29 14	2362	84 13 44	2355	85 58 23	2348	87 43 12	2343
	α Pegasi W.	76 22 20	2588	78 01 31	2579	79 40 55	2569	81 20 32	2561
	α Arietis W.	32 53 55	2716	34 30 13	2678	36 07 22	2646	37 45 14	2618
	Pollux E.	47 08 32	2533	45 28 05	2538	43 47 44	2543	42 07 31	2551
	Regulus E.	82 32 53	2366	80 48 29	2359	79 03 55	2353	77 19 12	2347
	VENUS E.	112 37 46	2610	110 59 05	2604	109 20 16	2598	107 41 18	2593
7	Fomalhaut W.	104 25 13	2735	106 01 07	2738	107 36 56	2743	109 12 39	2747
	JUPITER W.	96 29 14	2319	98 14 46	2315	100 00 24	2311	101 46 08	2308
	α Pegasi W.	89 41 01	2533	91 21 29	2529	93 02 02	2525	94 42 40	2523
	α Arietis W.	46 03 07	2513	47 44 02	2498	49 25 18	2485	51 06 53	2472
	Regulus E.	68 33 40	2342	66 48 13	2320	65 02 42	2315	63 17 05	2312
	VENUS E.	99 24 42	2569	97 45 04	2565	96 05 21	2561	94 25 33	2559

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.	Noon.	P. L. of Diff.	IIIh	P. L. of Diff.	VIh	P. L. of Diff.	IXh	P. L. of Diff.
8	JUPITER W.	103 31 56	2304	105 17 49	2302	107 03 45	2300	108 49 45	2298
	α Pegasi W.	96 23 21	2522	98 04 04	2521	99 44 48	2520	101 25 33	2521
	α Arietis W.	52 48 46	2461	54 30 54	2452	56 13 15	2443	57 55 49	2434
	Aldebaran W.	18 36 47	2302	20 22 43	2299	22 08 44	2296	23 54 49	2293
	Regulus E.	61 31 23	2309	59 45 37	2307	57 59 48	2304	56 13 55	2302
	VENUS E.	92 45 41	2556	91 05 45	2553	89 25 46	2551	87 45 44	2549
9	α Arietis W.	66 31 10	2405	68 14 37	2403	69 58 08	2398	71 41 45	2395
	Aldebaran W.	32 46 09	2284	34 32 32	2283	36 18 57	2282	38 05 23	2281
	Regulus E.	47 24 00	2298	45 37 58	2299	43 51 57	2299	42 05 56	2300
	VENUS E.	79 25 01	2544	77 44 49	2543	76 04 36	2543	74 24 22	2543
	SUN E.	124 23 21	2610	122 44 40	2609	121 05 58	2608	119 27 14	2607
10	α Arietis W.	80 20 38	2389	82 04 29	2388	83 48 21	2388	85 32 13	2389
	Aldebaran W.	46 57 38	2282	48 44 04	2283	50 30 29	2283	52 16 53	2284
	Regulus E.	33 16 25	2311	31 30 42	2315	29 45 04	2320	27 59 33	2325
	VENUS E.	66 03 25	2547	64 23 17	2548	62 43 11	2550	61 03 07	2551
	SUN E.	111 13 28	2608	109 34 44	2609	107 56 01	2610	106 17 19	2610
11	α Arietis W.	94 11 11	2396	95 54 51	2399	97 38 27	2402	99 21 59	2405
	Aldebaran W.	61 08 27	2291	62 54 39	2294	64 40 48	2295	66 26 55	2297
	VENUS E.	52 43 25	2562	51 03 38	2564	49 23 54	2567	47 44 14	2570
	SUN E.	98 04 14	2618	96 25 44	2621	94 47 17	2623	93 08 53	2625
12	α Arietis W.	107 58 22	2426	109 41 20	2431	111 24 10	2437	113 06 52	2443
	Aldebaran W.	75 16 40	2309	77 02 26	2312	78 48 08	2315	80 33 46	2317
	Pollux W.	33 35 45	2605	35 14 33	2583	36 53 52	2564	38 33 36	2549
	VENUS E.	39 26 55	2585	37 47 40	2589	36 08 30	2592	34 29 24	2596
	SUN E.	84 57 42	2638	83 19 39	2642	81 41 41	2644	80 03 46	2645
13	Aldebaran W.	89 20 51	2334	91 06 01	2337	92 51 06	2341	94 36 06	2344
	Pollux W.	46 56 40	2501	48 37 52	2495	50 19 12	2491	52 00 38	2488
	VENUS E.	26 15 19	2618	24 36 48	2622	22 58 23	2626	21 20 04	2632
	SUN E.	71 55 25	2666	70 18 00	2671	68 40 41	2675	67 03 27	2680
14	Aldebaran W.	103 19 42	2365	105 04 07	2370	106 48 25	2374	108 32 37	2379
	Pollux W.	60 28 34	2482	62 10 12	2484	63 51 48	2485	65 33 23	2487
	Regulus W.	23 32 15	2415	25 15 29	2414	26 58 44	2414	28 41 59	2415
	SUN E.	58 58 53	2704	57 22 18	2710	55 45 51	2715	54 09 31	2720
15	Pollux W.	74 00 28	2502	75 41 39	2506	77 22 44	2510	79 03 43	2515
	Regulus W.	37 17 43	2427	39 00 39	2431	40 43 30	2435	42 26 15	2441
	SUN E.	46 09 52	2753	44 34 23	2761	42 59 04	2769	41 23 55	2776
16	Pollux W.	87 26 45	2545	89 06 55	2552	90 46 56	2559	92 26 47	2567
	Regulus W.	50 58 02	2469	52 39 59	2476	54 21 46	2482	56 03 24	2489
	SUN E.	33 30 57	2823	31 56 59	2835	30 23 16	2846	28 49 48	2850
20	SUN W.	15 58 01	3250	17 23 11	3247	18 48 25	3245	20 13 41	3246
	JUPITER E.	91 26 43	2786	89 51 57	2797	88 17 25	2808	86 43 08	2819
21	SUN W.	27 19 15	3270	28 44 01	3279	30 08 37	3287	31 33 04	3295

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.	Midnight.	P. L. of Diff.	XVh	P. L. of Diff.	XVIIIh	P. L. of Diff.	XXIh	P. L. of Diff.
		° ' "		° ' "		° ' "		° ' "	
8	JUPITER W.	110 35 48	2296	112 21 53	2294	114 08 01	2293	115 54 11	2293
	α Pegasi W.	103 06 17	2522	104 46 59	2525	106 27 38	2527	108 08 13	2530
	α Arietis W.	59 38 35	2427	61 21 31	2422	63 04 35	2415	64 47 48	2409
	Aldebaran W.	25 40 59	2291	27 27 12	2289	29 13 28	2287	30 59 47	2285
	Regulus E.	54 27 59	2301	52 42 01	2300	50 56 02	2299	49 10 01	2299
	VENUS E.	86 05 39	2548	84 25 32	2546	82 45 23	2545	81 05 13	2544
9	α Arietis W.	73 25 27	2394	75 09 11	2391	76 52 58	2390	78 36 47	2389
	Aldebaran W.	39 51 50	2281	41 38 17	2281	43 24 44	2281	45 11 11	2281
	Regulus E.	40 19 57	2301	38 33 59	2304	36 48 05	2305	35 02 13	2308
	VENUS E.	72 44 09	2544	71 03 57	2544	69 23 45	2545	67 43 34	2546
	SUN E.	117 48 29	2607	116 09 44	2607	114 30 59	2607	112 52 13	2607
10	α Arietis W.	87 16 04	2389	88 59 54	2391	90 43 42	2392	92 27 28	2394
	Aldebaran W.	54 03 16	2286	55 49 36	2287	57 35 55	2288	59 22 12	2289
	Regulus E.	26 14 10	2333	24 28 58	2342	22 43 59	2351	20 59 14	2361
	VENUS E.	59 23 05	2553	57 43 06	2555	56 03 09	2557	54 23 15	2560
	SUN E.	104 38 38	2612	102 59 59	2613	101 21 22	2615	99 42 47	2616
11	α Arietis W.	101 05 27	2409	102 48 49	2412	104 32 06	2417	106 15 17	2421
	Aldebaran W.	68 12 59	2300	69 58 59	2302	71 44 56	2304	73 30 50	2307
	VENUS E.	46 04 38	2573	44 25 06	2576	42 45 38	2579	41 06 14	2583
	SUN E.	91 30 32	2627	89 52 14	2630	88 14 00	2632	86 35 49	2635
12	α Arietis W.	114 49 25	2450	116 31 48	2458	118 14 01	2465	119 56 04	2472
	Aldebaran W.	82 19 20	2320	84 04 50	2324	85 50 15	2326	87 35 36	2331
	Pollux W.	40 13 41	2535	41 54 05	2525	43 34 44	2515	45 15 37	2507
	VENUS E.	32 50 24	2600	31 11 29	2604	29 32 40	2608	27 53 56	2613
	SUN E.	78 25 56	2652	76 48 11	2655	75 10 31	2658	73 32 55	2663
13	Aldebaran W.	96 21 01	2348	98 05 50	2353	99 50 33	2356	101 35 11	2361
	Pollux W.	53 42 08	2485	55 23 42	2484	57 05 18	2482	58 46 56	2482
	VENUS E.	19 41 52	2638	18 03 48	2643	16 25 51	2649	14 48 02	2655
	SUN E.	65 26 20	2684	63 49 19	2689	62 12 24	2693	60 35 35	2698
14	Aldebaran W.	110 16 42	2384	112 00 39	2389	113 44 29	2394	115 28 12	2400
	Pollux W.	67 14 55	2489	68 56 24	2491	70 37 50	2494	72 19 12	2498
	Regulus W.	30 25 13	2416	32 08 25	2417	33 51 35	2420	35 34 41	2423
	SUN E.	52 33 18	2727	50 57 14	2733	49 21 18	2740	47 45 31	2746
15	Pollux W.	80 44 36	2520	82 25 21	2527	84 05 57	2533	85 46 25	2538
	Regulus W.	44 08 52	2446	45 51 21	2451	47 33 43	2457	49 15 57	2463
	SUN E.	39 48 56	2785	38 14 08	2794	36 39 32	2803	35 05 08	2813
16	Pollux W.	94 06 27	2575	95 45 56	2584	97 25 13	2593	99 04 18	2601
	Regulus W.	57 44 52	2497	59 26 10	2504	61 07 18	2512	62 48 15	2520
	SUN E.	27 16 36	2873	25 43 42	2888	24 11 08	2904	22 38 54	2919
20	SUN W.	21 38 56	3247	23 04 10	3251	24 29 19	3257	25 54 21	3264
	JUPITER E.	85 09 05	2831	83 35 17	2842	82 01 44	2854	80 28 26	2865
21	SUN W.	32 57 21	3305	34 21 27	3313	35 45 23	3322	37 09 09	3332

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Noon.	P. L. of Diff.	IIIh	P. L. of Diff.	VIh	P. L. of Diff.	IXh	P. L. of Diff.
			° ' "		° ' "		° ' "		° ' "	
21	JUPITER	E.	78 55 24	2876	77 22 35	2888	75 50 01	2900	74 17 41	2910
22	SUN	W.	38 32 44	3340	39 56 09	3350	41 19 23	3358	42 42 27	3366
	JUPITER	E.	66 39 21	2962	65 08 20	2972	63 37 32	2981	62 06 56	2990
	α Arietis	E.	117 27 02	3071	115 58 17	3077	114 29 39	3082	113 01 08	3089
23	SUN	W.	49 35 24	3408	50 57 32	3415	52 19 32	3422	53 41 24	3428
	JUPITER	E.	54 36 43	3034	53 07 12	3042	51 37 51	3049	50 08 39	3056
	α Arietis	E.	105 40 29	3120	104 12 44	3125	102 45 05	3131	101 17 33	3137
24	SUN	W.	60 28 59	3456	61 50 12	3461	63 11 20	3464	64 32 24	3468
	JUPITER	E.	42 44 44	3088	41 16 20	3093	39 48 02	3098	38 19 50	3102
	α Arietis	E.	94 01 27	3161	92 34 31	3164	91 07 39	3168	89 40 51	3172
25	SUN	W.	71 16 55	3479	72 37 43	3479	73 58 31	3480	75 19 18	3479
	MARS	W.	26 54 12	3498	28 14 38	3488	29 35 15	3479	30 56 03	3471
	JUPITER	E.	31 00 06	3122	29 32 23	3125	28 04 44	3128	26 37 08	3132
	α Arietis	E.	82 27 49	3184	81 01 21	3186	79 34 55	3187	78 08 30	3188
	Aldebaran	E.	115 24 03	3077	113 55 25	3078	112 26 49	3078	110 58 12	3077
26	SUN	W.	82 03 33	3469	83 24 32	3466	84 45 34	3462	86 06 41	3457
	MARS	W.	37 42 16	3432	39 03 56	3424	40 25 45	3416	41 47 43	3408
	SATURN	W.	20 50 16	3226	22 15 51	3210	23 41 49	3194	25 08 07	3178
	α Arietis	E.	10 56 34	3188	69 30 10	3187	68 03 45	3186	66 37 19	3184
	Aldebaran	E.	103 34 48	3069	102 06 00	3065	100 37 08	3061	99 08 11	3057
27	SUN	W.	92 53 46	3426	94 15 33	3419	95 37 28	3410	96 59 33	3401
	MARS	W.	48 39 50	3365	50 02 46	3357	51 25 52	3346	52 49 10	3336
	α Aquilæ	W.	43 55 19	3078	45 07 20	3074	46 20 15	3072	47 34 03	3062
	SATURN	W.	32 23 42	3115	33 51 33	3104	35 19 38	3092	36 47 57	3080
	α Arietis	E.	59 24 37	3174	57 57 57	3173	56 31 15	3170	55 04 30	3168
	Aldebaran	E.	91 41 56	3029	90 12 19	3022	88 42 33	3014	87 12 37	3005
28	SUN	W.	103 52 37	3351	105 15 50	3339	106 39 16	3327	108 02 56	3315
	MARS	W.	59 48 46	3279	61 13 22	3267	62 38 12	3254	64 03 17	3241
	α Aquilæ	W.	53 54 45	3620	55 12 58	3585	56 31 49	3551	57 51 17	3519
	SATURN	W.	44 13 09	3021	45 42 56	3009	47 12 58	2996	48 43 16	2982
	α Arietis	E.	47 50 05	3159	46 23 07	3158	44 56 08	3159	43 29 10	3161
	Aldebaran	E.	79 40 15	2958	78 09 10	2948	76 37 52	2936	75 06 19	2925
29	SUN	W.	115 04 59	3247	116 30 12	3233	117 55 42	3219	119 21 29	3204
	MARS	W.	71 12 47	3169	72 39 33	3154	74 06 37	3138	75 34 00	3124
	α Aquilæ	W.	64 37 02	3377	65 59 45	3350	67 22 59	3324	68 46 43	3300
	SATURN	W.	56 19 01	2913	57 51 03	2898	59 23 24	2883	60 56 04	2868
	Aldebaran	E.	67 24 44	2861	65 51 35	2847	64 18 08	2833	62 44 23	2819
	Pollux	E.	110 31 18	2961	109 00 16	2946	107 28 55	2930	105 57 14	2913
30	MARS	W.	82 55 45	3042	84 25 07	3024	85 54 50	3007	87 24 54	2989
	α Aquilæ	W.	75 52 18	3185	77 18 45	3164	78 45 37	3143	80 12 55	3123
	SATURN	W.	68 44 23	2789	70 19 05	2773	71 54 08	2756	73 29 33	2741
	Aldebaran	E.	54 50 51	2743	53 15 08	2728	51 39 05	2711	50 02 40	2695
	Pollux	E.	98 13 39	2832	96 39 53	2816	95 05 46	2800	93 31 18	2783

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.	P. L. of Diff.	XV ^h	P. L. of Diff.	XVIII ^h	P. L. of Diff.	XXI ^h	P. L. of Diff.
			° ' "		° ' "		° ' "		° ' "	
21	JUPITER	E.	72 45 34	2920	71 13 41	2931	69 42 02	2941	68 10 35	2951
22	SUN	W.	44 05 22	3376	45 28 06	3384	46 50 41	3392	48 13 07	3400
	JUPITER	E.	60 36 31	3000	59 06 18	3009	57 36 16	3017	56 06 24	3026
	α Arietis	E.	111 32 45	3096	110 04 30	3101	108 36 22	3108	107 08 22	3114
23	SUN	W.	55 03 09	3435	56 24 46	3441	57 46 16	3446	59 07 40	3451
	JUPITER	E.	48 39 36	3064	47 10 42	3069	45 41 55	3076	44 13 16	3082
	α Arietis	E.	99 50 08	3142	98 22 49	3147	96 55 36	3152	95 28 29	3156
24	SUN	W.	65 53 24	3471	67 14 20	3473	68 35 14	3476	69 56 05	3477
	JUPITER	E.	36 51 43	3107	35 23 42	3110	33 55 45	3114	32 27 53	3119
	α Arietis	E.	88 14 08	3175	86 47 29	3178	85 20 53	3180	83 54 20	3182
25	SUN	W.	76 40 06	3478	78 00 55	3477	79 21 45	3474	80 42 38	3472
	MARS	W.	32 17 00	3463	33 38 06	3455	34 59 20	3446	36 20 44	3439
	JUPITER	E.	25 09 37	3136	23 42 11	3139	22 14 49	3143	20 47 32	3146
	α Arietis	E.	76 42 06	3188	75 15 43	3188	73 49 20	3188	72 22 57	3188
	Aldebaran	E.	109 29 34	3076	108 00 55	3075	106 32 15	3073	105 03 33	3071
26	SUN	W.	87 27 53	3452	88 49 11	3446	90 10 35	3439	91 32 07	3433
	MARS	W.	43 09 50	3401	44 32 05	3393	45 54 30	3384	47 17 05	3375
	SATURN	W.	26 34 42	3164	28 01 34	3151	29 28 42	3138	30 56 05	3127
	α Arietis	E.	65 10 51	3183	63 44 21	3181	62 17 49	3178	60 51 14	3177
	Aldebaran	E.	97 39 09	3052	96 10 01	3047	94 40 47	3041	93 11 25	3035
27	SUN	W.	98 21 48	3393	99 44 13	3383	101 06 49	3372	102 29 37	3362
	MARS	W.	54 12 40	3325	55 36 22	3315	57 00 16	3303	58 24 24	3291
	α Aquilæ	W.	48 48 42	3777	50 04 08	3735	51 20 18	3694	52 37 11	3656
	SATURN	W.	38 16 31	3069	39 45 18	3057	41 14 20	3045	42 43 37	3033
	α Arietis	E.	53 37 42	3165	52 10 51	3163	50 43 57	3162	49 17 02	3160
	Aldebaran	E.	85 42 31	2997	84 12 15	2988	82 41 47	2978	81 11 07	2969
28	SUN	W.	109 26 50	3302	110 50 59	3289	112 15 23	3276	113 40 03	3262
	MARS	W.	65 28 38	3227	66 54 15	3214	68 20 08	3198	69 46 19	3184
	α Aquilæ	W.	59 11 20	3488	60 31 57	3459	61 53 07	3431	63 14 49	3403
	SATURN	W.	50 13 51	2969	51 44 42	2955	53 15 51	2942	54 47 17	2927
	α Arietis	E.	42 02 14	3163	40 35 21	3167	39 08 32	3172	37 41 49	3179
	Aldebaran	E.	73 34 32	2912	72 02 29	2901	70 30 11	2887	68 57 36	2874
29	SUN	W.	120 47 34	3188	122 13 58	3172	123 40 41	3157	125 07 42	3141
	MARS	W.	77 01 41	3107	78 29 42	3091	79 58 03	3074	81 26 44	3058
	α Aquilæ	W.	70 10 55	3276	71 35 35	3252	73 00 43	3230	74 26 17	3207
	SATURN	W.	62 29 04	2853	64 02 23	2838	65 36 02	2821	67 10 02	2805
	Aldebaran	E.	61 10 20	2804	59 35 57	2789	58 01 15	2774	56 26 13	2759
	Pollux	E.	104 25 12	2898	102 52 50	2881	101 20 07	2865	99 47 03	2849
30	MARS	W.	88 55 20	2973	90 26 07	2954	91 57 17	2937	93 28 49	2920
	α Aquilæ	W.	81 40 37	3103	83 08 43	3084	84 37 12	3065	86 06 05	3047
	SATURN	W.	75 05 19	2724	76 41 27	2707	78 17 57	2690	79 54 50	2674
	Aldebaran	E.	48 25 54	2679	46 48 46	2663	45 11 16	2646	43 33 24	2630
	Pollux	E.	91 56 28	2767	90 21 17	2750	88 45 44	2734	87 09 49	2717

AT GREENWICH APPARENT NOON.

AT GREENWICH APPARENT NOON.											
Day of the Week.	Day of the Month.	THE SUN'S						Sidereal Time of Semi-diameter Passing Meridian.	Equation of Time, to be Subtracted from		Diff. for 1 Hour.
		Apparent Right Ascension.	Diff. for 1 Hour.	Apparent Declination.	Diff. for 1 Hour.	Semi-diameter.	Added to Apparent Time.				
Tues.	1	h m s	s	° ' "	"	"	s	m s	s		
Wed.	2	16 25 25.86	+ 10.770	S. 21 40 13.2	- 24.27	16 15.25	70.17	11 12.32	0.911		
Thur.	3	16 29 44.65	10.797	21 49 43.3	23.23	16 15.41	70.26	10 50.13	0.938		
	4	16 34 04.06	10.823	21 58 48.3	22.17	16 15.57	70.34	10 27.33	0.964		
Frid.	5	16 38 24.11	+ 10.848	22 07 27.8	- 21.11	16 15.71	70.42	10 03.92	0.989		
Sat.	6	16 42 44.75	10.872	22 15 41.6	20.04	16 15.85	70.50	9 39.90	1.013		
SUN.	7	16 47 05.97	10.896	22 23 29.6	18.95	16 15.98	70.58	9 15.30	1.037		
Mon.	8	16 51 27.75	+ 10.919	22 30 51.4	- 17.86	16 16.10	70.65	8 50.16	1.066		
Tues.	9	16 55 50.06	10.940	22 37 46.7	16.75	16 16.23	70.72	8 24.47	1.081		
Wed.	10	17 00 12.89	10.962	22 44 15.5	15.64	16 16.35	70.79	7 58.27	1.102		
Thur.	11	17 04 36.20	+ 10.982	22 50 17.5	- 14.52	16 16.46	70.85	7 31.58	1.122		
Frid.	12	17 08 59.98	11.000	22 55 52.4	13.39	16 16.56	70.90	7 04.43	1.140		
Sat.	13	17 13 24.19	11.018	23 01 00.2	12.26	16 16.66	70.96	6 36.86	1.158		
SUN.	14	17 17 48.80	+ 11.034	23 05 40.6	- 11.11	16 16.77	71.01	6 08.88	1.174		
Mon.	15	17 22 13.78	11.048	23 09 53.6	9.97	16 16.86	71.05	5 40.53	1.188		
Tues.	16	17 26 39.10	11.062	23 13 38.8	8.81	16 16.95	71.09	5 11.84	1.202		
Wed.	17	17 31 04.72	+ 11.073	23 16 56.3	- 7.65	16 17.04	71.13	4 42.88	1.213		
Thur.	18	17 35 30.59	11.083	23 19 45.8	6.47	16 17.12	71.17	4 13.64	1.223		
Frid.	19	17 39 56.69	11.092	23 22 07.4	5.30	16 17.20	71.19	3 44.18	1.232		
Sat.	20	17 44 22.98	+ 11.099	23 24 00.9	- 4.14	16 17.28	71.21	3 14.52	1.239		
SUN.	21	17 48 49.42	11.104	23 25 26.2	2.96	16 17.35	71.23	2 44.72	1.244		
Mon.	22	17 53 15.97	11.108	23 26 23.2	1.79	16 17.42	71.24	2 14.81	1.248		
Tues.	23	17 57 42.59	+ 11.110	23 26 52.1	- 0.61	16 17.48	71.25	1 44.83	1.250		
Wed.	24	18 02 09.25	11.111	23 26 52.6	+ 0.57	16 17.55	71.25	1 14.81	1.251		
Thur.	25	18 06 35.91	11.110	23 26 24.8	1.75	16 17.60	71.25	0 44.79	1.250		
Frid.	26	18 11 02.53	+ 11.108	23 25 28.7	+ 2.92	16 17.65	71.25	0 14.81	1.248		
Sat.	27	18 15 29.08	11.104	23 24 04.4	4.10	16 17.70	71.24	0 15.11	1.244		
SUN.	28	18 19 55.52	11.099	23 22 11.8	5.28	16 17.74	71.22	0 44.90	1.239		
Mon.	29	18 24 21.82	+ 11.092	23 19 51.0	+ 6.45	16 17.79	71.20	1 14.57	1.232		
Tues.	30	18 28 47.94	11.084	23 17 02.2	7.62	16 17.82	71.18	1 44.05	1.224		
Wed.	31	18 33 13.84	11.075	23 13 45.3	8.78	16 17.85	71.15	2 13.33	1.215		
Thur.	32	18 37 39.51	11.064	23 10 00.4	9.94	16 17.87	71.12	2 42.35	1.204		
Frid.	33	18 42 04.91	+ 11.053	S. 23 05 47.7	+ 11.10	16 17.88	71.08	3 11.10	1.193		

NOTE.—The mean time of semidiameter passing the meridian may be found by subtracting 0.19^s from the sidereal time. The sign — prefixed to the hourly change of declination indicates that south declinations are increasing; the sign + indicates that south declinations are decreasing.

NOTE.—The mean time of semidiameter passing the meridian may be found by subtracting 0.19^s from the sidereal time. The sign — prefixed to the hourly change of declination indicates that south declinations are increasing; the sign + indicates that south declinations are decreasing.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S				Equation of Time, to be Added to		Diff. for 1 Hour.	Sidereal Time, or Right Ascension of Mean Sun.
		Apparent Right Ascension.	Diff. for 1 Hour.	Apparent Declination.	Diff. for 1 Hour.	Subtracted from Mean Time.			
Tues.	1	^h 16 ^m 25 ^s 27.86	+ 10.767	S. 21° 40' 17.8"	- 24.26	^m 11 ^s 12.15	- 0.911	^h 16 ^m 36 ^s 40.01	
Wed.	2	16 29 46.60	10.794	21 49 47.5	23.22	10 49.96	0.938	16 40 36.56	
Thur.	3	16 34 05.96	10.820	21 58 52.1	22.16	10 27.16	0.964	16 44 33.12	
Frid.	4	16 38 25.93	+ 10.845	22 07 31.3	- 21.10	10 03.75	- 0.989	16 48 29.68	
Sat.	5	16 42 46.50	10.869	22 15 44.8	20.03	9 39.74	1.013	16 52 26.24	
SUN.	6	16 47 07.65	10.893	22 23 32.5	18.94	9 15.14	1.037	16 56 22.79	
Mon.	7	16 51 29.35	+ 10.916	22 30 54.0	- 17.85	8 50.00	- 1.060	17 00 19.35	
Tues.	8	16 55 51.59	10.937	22 37 49.1	16.74	8 24.32	1.081	17 04 15.91	
Wed.	9	17 00 14.34	10.958	22 44 17.6	15.63	7 58.12	1.102	17 08 12.46	
Thur.	10	17 04 37.58	+ 10.978	22 50 19.3	- 14.51	7 31.44	- 1.122	17 12 09.02	
Frid.	11	17 09 01.28	10.996	22 55 54.0	13.38	7 04.30	1.140	17 16 05.58	
Sat.	12	17 13 25.40	11.014	23 01 01.6	12.25	6 36.73	1.158	17 20 02.13	
SUN.	13	17 17 49.93	+ 11.030	23 05 41.8	- 11.10	6 08.76	- 1.174	17 23 58.69	
Mon.	14	17 22 14.83	11.044	23 09 54.5	9.96	5 40.42	1.188	17 27 55.25	
Tues.	15	17 26 40.06	11.058	23 13 39.6	8.80	5 11.74	1.202	17 31 51.80	
Wed.	16	17 31 05.58	+ 11.069	23 16 56.9	- 7.64	4 42.78	- 1.213	17 35 48.36	
Thur.	17	17 35 31.37	11.079	23 19 46.3	6.48	4 13.55	1.223	17 39 44.92	
Frid.	18	17 39 57.38	11.088	23 22 07.8	5.31	3 44.10	1.232	17 43 41.48	
Sat.	19	17 44 23.58	+ 11.095	23 24 01.1	- 4.14	3 14.45	- 1.239	17 47 38.03	
SUN.	20	17 48 49.93	11.100	23 25 26.3	2.96	2 44.66	1.244	17 51 34.59	
Mon.	21	17 53 16.38	11.104	23 26 23.3	1.79	2 14.76	1.248	17 55 31.15	
Tues.	22	17 57 42.91	+ 11.106	23 26 52.1	- 0.61	1 44.79	- 1.250	17 59 27.70	
Wed.	23	18 02 09.48	11.107	23 26 52.6	+ 0.57	1 14.78	1.251	18 03 24.26	
Thur.	24	18 06 36.05	11.106	23 26 24.8	1.75	0 44.77	1.250	18 07 20.82	
Frid.	25	18 11 02.58	+ 11.104	23 25 28.7	+ 2.92	0 14.80	- 1.248	18 11 17.38	
Sat.	26	18 15 29.04	11.100	23 24 04.4	4.10	0 15.10	1.244	18 15 13.94	
SUN.	27	18 19 55.38	11.095	23 22 11.9	5.28	0 44.89	1.239	18 19 10.49	
Mon.	28	18 24 21.59	+ 11.088	23 19 51.2	+ 6.45	1 14.54	- 1.232	18 23 07.05	
Tues.	29	18 28 47.62	11.080	23 17 02.4	7.62	1 44.01	1.224	18 27 03.61	
Wed.	30	18 33 13.44	11.071	23 13 45.6	8.78	2 13.28	1.215	18 31 00.16	
Thur.	31	18 37 39.02	11.060	23 10 00.8	9.94	2 42.30	1.204	18 34 56.72	
Frid.	32	18 42 04.32	+ 11.049	S. 23° 05' 48.3"	+ 11.10	3 11.04	- 1.193	18 38 53.28	

NOTE.—The semidiameter for mean noon may be assumed the same as that for apparent noon.

The sign — prefixed to the hourly change of declination indicates that south declinations are increasing; the sign + indicates that south declinations are decreasing.

Diff. for 1 Hour,
+9.8565".
(Table III.)

AT GREENWICH MEAN NOON.									
Day of the Month.	Day of the Year.	THE SUN'S					Logarithm of the Radius Vector of the Earth.	Diff. for 1 Hour.	Mean Time of Sidereal Noon.
		TRUE LONGITUDE.		Diff. for 1 Hour.	LATITUDE.				
		λ	λ'						
		° ' "	° ' "	"	"			h m s	
1	335	248 07 57.1	7 11.1	+152.04	+ 0.16	9.993 8257	- 29.7	7 22 07.36	
2	336	249 08 46.5	8 00.3	152.08	+ 0.05	9.993 7555	28.7	7 18 11.45	
3	337	250 09 36.9	8 50.5	152.12	- 0.05	9.993 6878	27.7	7 14 15.54	
4	338	251 10 28.3	9 41.8	+152.16	- 0.11	9.993 6226	- 26.6	7 10 19.63	
5	339	252 11 20.8	10 34.1	152.21	0.16	9.993 5599	25.6	7 06 23.72	
6	340	253 12 14.3	11 27.5	152.25	0.18	9.993 4999	24.5	7 02 27.81	
7	341	254 13 09.0	12 22.0	+152.30	- 0.15	9.993 4425	- 23.4	6 58 31.90	
8	342	255 14 04.9	13 17.8	152.35	0.10	9.993 3876	22.4	6 54 35.99	
9	343	256 15 02.0	14 14.7	152.40	- 0.02	9.993 3352	21.4	6 50 40.08	
10	344	257 16 00.3	15 12.8	+152.45	+ 0.07	9.993 2850	- 20.4	6 46 44.16	
11	345	258 16 59.7	16 12.0	152.50	0.19	9.993 2371	19.5	6 42 48.25	
12	346	259 18 00.3	17 12.5	152.55	0.31	9.993 1912	18.7	6 38 52.34	
13	347	260 19 02.0	18 14.0	+152.59	+ 0.44	9.993 1473	- 17.9	6 34 56.43	
14	348	261 20 04.8	19 16.6	152.63	0.56	9.993 1052	17.2	6 31 00.52	
15	349	262 21 08.5	20 20.2	152.67	0.67	9.993 0648	16.5	6 27 04.61	
16	350	263 22 13.1	21 24.6	+152.71	+ 0.75	9.993 0261	- 15.8	6 23 08.70	
17	351	264 23 18.5	22 29.9	152.74	0.82	9.992 9890	15.1	6 19 12.79	
18	352	265 24 24.7	23 35.8	152.77	0.85	9.992 9535	14.5	6 15 16.87	
19	353	266 25 31.4	24 42.4	+152.79	+ 0.86	9.992 9196	- 13.8	6 11 20.96	
20	354	267 26 38.6	25 49.5	152.81	0.84	9.992 8874	13.1	6 07 25.05	
21	355	268 27 46.3	26 57.0	152.83	0.80	9.992 8568	12.4	6 03 29.14	
22	356	269 28 54.4	28 04.9	+152.84	+ 0.72	9.992 8279	- 11.7	5 59 33.23	
23	357	270 30 02.7	29 13.0	152.85	0.63	9.992 8008	10.9	5 55 37.32	
24	358	271 31 11.2	30 21.4	152.86	0.52	9.992 7756	10.1	5 51 41.41	
25	359	272 32 19.8	31 29.8	+152.86	+ 0.41	9.992 7523	- 9.3	5 47 45.50	
26	360	273 33 28.6	32 38.4	152.86	0.29	9.992 7312	8.4	5 43 49.58	
27	361	274 34 37.3	33 47.0	152.86	0.16	9.992 7122	7.4	5 39 53.67	
28	362	275 35 46.0	34 55.5	+152.86	+ 0.03	9.992 6955	- 6.4	5 35 57.76	
29	363	276 36 54.7	36 04.0	152.86	- 0.09	9.992 6812	5.4	5 32 01.85	
30	364	277 38 03.3	37 12.4	152.86	0.19	9.992 6694	4.4	5 28 05.94	
31	365	278 39 11.8	38 20.8	152.85	0.26	9.992 6603	3.2	5 24 10.03	
32	366	279 40 20.2	39 29.0	+152.85	- 0.32	9.992 6540	- 2.0	5 20 14.12	

NOTE.—The longitudes in the column λ are referred to the true equinox of their own date, while those in the column λ' are referred to the mean equinox of the beginning of the Besselian fictitious year.

Diff. for 1 Hour.
—9.8296".
(Table II.)

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month.	SEMIDIAMETER.		HORIZONTAL PARALLAX.				UPPER TRANSIT.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 Hour.	Midnight.	Diff. for 1 Hour.	Meridian of Greenwich.	Diff. for 1 Hour.	Noon.
	' "	' "	' "	"	' "	"	h m	m	d
1	15 32.9	15 39.6	56 58.0	+ 2.03	57 22.5	+ 2.04	9 23.3	+ 2.07	12.3
2	15 46.3	15 52.8	57 47.1	2.02	58 11.0	1.95	10 14.6	2.20	13.3
3	15 59.1	16 04.9	58 33.9	1.84	58 55.2	1.68	11 09.1	2.33	14.3
4	16 10.1	16 14.6	59 14.4	+ 1.49	59 31.1	+ 1.27	12 06.5	+ 2.44	15.3
5	16 18.4	16 21.3	59 44.9	1.02	59 55.5	0.75	13 05.9	2.49	16.3
6	16 23.3	16 24.4	60 02.9	+ 0.48	60 06.9	+ 0.20	14 05.8	2.48	17.3
7	16 24.6	16 24.0	60 07.7	- 0.06	60 05.4	- 0.31	15 04.7	+ 2.41	18.3
8	16 22.6	16 20.5	60 00.2	0.53	59 52.5	0.73	16 01.6	2.32	19.3
9	16 17.8	16 14.6	59 42.7	0.90	59 31.0	1.03	16 56.0	2.22	20.3
10	16 11.1	16 07.2	59 17.9	- 1.14	59 03.7	- 1.21	17 48.2	+ 2.14	21.3
11	16 03.1	15 58.9	58 48.8	1.27	58 33.3	1.30	18 38.8	2.08	22.3
12	15 54.6	15 50.3	58 17.5	1.32	58 01.6	1.32	19 28.3	2.06	23.3
13	15 46.0	15 41.7	57 45.8	- 1.32	57 30.0	- 1.30	20 17.5	+ 2.06	24.3
14	15 37.4	15 33.2	57 14.5	1.29	56 59.1	1.27	21 07.0	2.07	25.3
15	15 29.1	15 25.1	56 44.0	1.25	56 29.2	1.23	21 56.8	2.09	26.3
16	15 21.1	15 17.2	56 14.6	- 1.20	56 00.3	- 1.17	22 47.1	+ 2.10	27.3
17	15 13.4	15 09.7	55 46.4	1.15	55 32.8	1.11	23 37.4	2.09	28.3
18	15 06.2	15 02.8	55 19.7	1.06	55 07.3	1.01	0		29.3
19	14 59.5	14 56.5	54 55.5	- 0.95	54 44.4	- 0.88	0 27.2	+ 2.06	0.6
20	14 53.8	14 51.3	54 34.3	0.79	54 25.4	0.69	1 16.0	2.00	1.6
21	14 49.2	14 47.6	54 17.7	0.58	54 11.5	0.45	2 03.4	1.94	2.6
22	14 46.3	14 45.6	54 07.0	- 0.30	54 04.3	- 0.14	2 49.2	+ 1.88	3.6
23	14 45.4	14 45.8	54 03.6	+ 0.03	54 05.0	+ 0.21	3 33.6	1.82	4.6
24	14 46.8	14 48.4	54 08.6	0.40	54 14.7	0.61	4 16.9	1.79	5.6
25	14 50.8	14 53.8	54 23.2	+ 0.81	54 34.3	+ 1.03	4 59.7	+ 1.78	6.6
26	14 57.5	15 01.9	54 47.9	1.24	55 04.0	1.44	5 42.7	1.81	7.6
27	15 06.9	15 12.6	55 22.6	1.64	55 43.5	1.83	6 26.7	1.87	8.6
28	15 18.9	15 25.7	56 06.5	+ 2.00	56 31.4	+ 2.14	7 12.5	+ 1.96	9.6
29	15 32.9	15 40.4	56 57.9	2.25	57 25.5	2.33	8 01.0	2.09	10.6
30	15 48.1	15 55.9	57 53.8	2.36	58 22.2	2.35	8 52.8	2.23	11.6
31	16 03.5	16 10.8	58 50.1	2.28	59 16.9	2.15	9 48.1	2.38	12.6
32	16 17.6	16 23.6	59 41.8	+ 1.97	60 04.2	+ 1.73	10 46.7	+ 2.54	13.6

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
TUESDAY 1.					THURSDAY 3.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
0	1 41 24.72	+ 2.1224	N. 8 30 06.9	+ 9.250	0	3 28 50.50	+ 2.3587	N. 14 59 12.2	+ 6.536
1	1 43 32.20	2.1269	8 39 21.0	9.219	1	3 31 12.17	2.3637	15 05 42.0	6.454
2	1 45 39.95	2.1313	8 48 33.2	9.188	2	3 33 34.14	2.3686	15 12 06.7	6.369
3	1 47 47.96	2.1358	8 57 43.5	9.154	3	3 35 56.40	2.3734	15 18 26.3	6.283
4	1 49 56.25	2.1404	9 06 51.7	9.119	4	3 38 18.95	2.3783	15 24 40.7	6.196
5	1 52 04.81	2.1449	9 15 57.8	9.083	5	3 40 41.80	2.3832	15 30 49.8	6.108
6	1 54 13.64	2.1495	9 25 01.7	9.047	6	3 43 04.94	2.3881	15 36 53.6	6.018
7	1 56 22.75	2.1542	9 34 03.4	9.010	7	3 45 28.37	2.3929	15 42 52.0	5.927
8	1 58 32.14	2.1588	9 43 02.9	8.972	8	3 47 52.09	2.3977	15 48 44.9	5.835
9	2 00 41.80	2.1634	9 52 00.0	8.932	9	3 50 16.09	2.4024	15 54 32.2	5.743
10	2 02 51.75	2.1682	10 00 54.7	8.891	10	3 52 40.38	2.4071	16 00 14.0	5.649
11	2 05 01.99	2.1730	10 09 46.9	8.849	11	3 55 04.94	2.4118	16 05 50.1	5.554
12	2 07 12.51	2.1778	10 18 36.6	8.807	12	3 57 29.79	2.4164	16 11 20.5	5.458
13	2 09 23.32	2.1826	10 27 23.7	8.763	13	3 59 54.91	2.4209	16 16 45.1	5.361
14	2 11 34.42	2.1873	10 36 08.2	8.718	14	4 02 20.30	2.4255	16 22 03.8	5.263
15	2 13 45.80	2.1922	10 44 49.9	8.673	15	4 04 45.97	2.4300	16 27 16.7	5.164
16	2 15 57.48	2.1971	10 53 28.9	8.627	16	4 07 11.90	2.4344	16 32 23.5	5.065
17	2 18 09.45	2.2020	11 02 05.1	8.578	17	4 09 38.10	2.4388	16 37 24.3	4.962
18	2 20 21.72	2.2069	11 10 38.3	8.528	18	4 12 04.56	2.4432	16 42 19.0	4.861
19	2 22 34.28	2.2118	11 19 08.5	8.478	19	4 14 31.28	2.4475	16 47 07.6	4.758
20	2 24 47.14	2.2168	11 27 35.7	8.427	20	4 16 58.26	2.4518	16 51 49.9	4.653
21	2 27 00.30	2.2218	11 35 59.8	8.376	21	4 19 25.49	2.4559	16 56 26.0	4.548
22	2 29 13.75	2.2268	11 44 20.8	8.323	22	4 21 52.97	2.4600	17 00 55.7	4.442
23	2 31 27.51	+ 2.2318	N. 11 52 38.5	+ 8.268	23	4 24 20.69	+ 2.4641	N. 17 05 19.0	+ 4.335
WEDNESDAY 2.					FRIDAY 4.				
0	2 33 41.57	+ 2.2368	N. 12 00 52.9	+ 8.212	0	4 26 48.66	+ 2.4681	N. 17 09 35.9	+ 4.228
1	2 35 55.93	2.2419	12 09 03.9	8.155	1	4 29 16.86	2.4720	17 13 46.3	4.118
2	2 38 10.60	2.2470	12 17 11.5	8.098	2	4 31 45.30	2.4759	17 17 50.1	4.008
3	2 40 25.57	2.2520	12 25 15.6	8.039	3	4 34 13.97	2.4798	17 21 47.3	3.898
4	2 42 40.84	2.2570	12 33 16.2	7.979	4	4 36 42.87	2.4835	17 25 37.8	3.787
5	2 44 56.41	2.2622	12 41 13.1	7.918	5	4 39 11.99	2.4872	17 29 21.7	3.675
6	2 47 12.30	2.2673	12 49 06.3	7.855	6	4 41 41.33	2.4908	17 32 58.8	3.561
7	2 49 28.49	2.2723	12 56 55.7	7.791	7	4 44 10.88	2.4943	17 36 29.0	3.447
8	2 51 44.98	2.2774	13 04 41.2	7.727	8	4 46 40.65	2.4978	17 39 52.4	3.333
9	2 54 01.78	2.2826	13 12 22.9	7.662	9	4 49 10.62	2.5012	17 43 08.9	3.217
10	2 56 18.89	2.2878	13 20 00.6	7.595	10	4 51 40.79	2.5044	17 46 18.4	3.101
11	2 58 36.31	2.2928	13 27 34.3	7.527	11	4 54 11.15	2.5077	17 49 21.0	2.984
12	3 00 54.03	2.2979	13 35 03.8	7.457	12	4 56 41.71	2.5108	17 52 16.5	2.866
13	3 03 12.06	2.3031	13 42 29.1	7.387	13	4 59 12.45	2.5139	17 55 04.9	2.748
14	3 05 30.40	2.3082	13 49 50.2	7.316	14	5 01 43.38	2.5169	17 57 46.2	2.629
15	3 07 49.04	2.3133	13 57 07.0	7.243	15	5 04 14.48	2.5198	18 00 20.4	2.509
16	3 10 07.99	2.3183	14 04 19.4	7.169	16	5 06 45.76	2.5227	18 02 47.3	2.388
17	3 12 27.24	2.3234	14 11 27.3	7.094	17	5 09 17.20	2.5254	18 05 07.0	2.267
18	3 14 46.80	2.3285	14 18 30.7	7.018	18	5 11 48.81	2.5281	18 07 19.4	2.146
19	3 17 06.66	2.3335	14 25 29.5	6.941	19	5 14 20.57	2.5307	18 09 24.5	2.024
20	3 19 26.82	2.3386	14 32 23.6	6.863	20	5 16 52.49	2.5332	18 11 22.3	1.902
21	3 21 47.29	2.3437	14 39 13.0	6.783	21	5 19 24.55	2.5355	18 13 12.7	1.776
22	3 24 08.06	2.3487	14 45 57.6	6.703	22	5 21 56.75	2.5378	18 14 55.6	1.654
23	3 26 29.13	2.3537	14 52 37.4	6.622	23	5 24 29.08	2.5400	18 16 31.2	1.531
24	3 28 50.50	+ 2.3587	N. 14 59 12.2	+ 6.538	24	5 27 01.55	+ 2.5422	N. 18 17 59.3	+ 1.406

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
SATURDAY 5.					MONDAY 7.				
0	h m s 5 27 01.55	+ 2.5422	N.18 17 59.3	+ 1.406	0	h m s 7 29 38.91	+ 2.5310	N.16 59 15.5	- 4.615
1	5 29 34.14	2.5442	18 19 19.9	1.280	1	7 32 10.70	2.5286	16 54 35.1	4.731
2	5 32 06.85	2.5461	18 20 32.9	1.154	2	7 34 42.34	2.5262	16 49 47.8	4.847
3	5 34 39.67	2.5479	18 21 38.4	1.029	3	7 37 13.84	2.5237	16 44 53.5	4.962
4	5 37 12.60	2.5497	18 22 36.4	0.903	4	7 39 45.18	2.5210	16 39 52.4	5.074
5	5 39 45.63	2.5513	18 23 26.8	0.776	5	7 42 16.36	2.5183	16 34 44.6	5.187
6	5 42 18.76	2.5528	18 24 09.5	0.649	6	7 44 47.38	2.5157	16 29 30.0	5.298
7	5 44 51.97	2.5543	18 24 44.7	0.522	7	7 47 18.24	2.5129	16 24 08.8	5.409
8	5 47 25.27	2.5557	18 25 12.2	0.394	8	7 49 48.93	2.5101	16 18 40.9	5.520
9	5 49 58.65	2.5569	18 25 32.0	0.267	9	7 52 19.45	2.5072	16 13 06.4	5.629
10	5 52 32.10	2.5580	18 25 44.2	0.139	10	7 54 49.79	2.5042	16 07 25.4	5.738
11	5 55 05.61	2.5591	18 25 48.7	+ 0.011	11	7 57 19.95	2.5012	16 01 37.9	5.845
12	5 57 39.19	2.5601	18 25 45.5	- 0.118	12	7 59 49.93	2.4981	15 55 44.0	5.952
13	6 00 12.82	2.5609	18 25 34.6	0.246	13	8 02 19.72	2.4950	15 49 43.7	6.057
14	6 02 46.50	2.5617	18 25 16.0	0.374	14	8 04 49.33	2.4919	15 43 37.2	6.161
15	6 05 20.22	2.5623	18 24 49.7	0.503	15	8 07 18.75	2.4887	15 37 24.4	6.265
16	6 07 53.98	2.5629	18 24 15.6	0.632	16	8 09 47.97	2.4853	15 31 05.4	6.368
17	6 10 27.77	2.5634	18 23 33.9	0.760	17	8 12 16.99	2.4821	15 24 40.3	6.469
18	6 13 01.59	2.5637	18 22 44.4	0.888	18	8 14 45.82	2.4788	15 18 09.1	6.570
19	6 15 35.42	2.5639	18 21 47.3	1.017	19	8 17 14.44	2.4753	15 11 31.9	6.669
20	6 18 09.26	2.5641	18 20 42.4	1.146	20	8 19 42.85	2.4718	15 04 48.8	6.768
21	6 20 43.11	2.5643	18 19 29.8	1.274	21	8 22 11.06	2.4684	14 57 59.8	6.865
22	6 23 16.97	2.5643	18 18 09.5	1.402	22	8 24 39.06	2.4649	14 51 05.0	6.961
23	6 25 50.82	+ 2.5640	N.18 16 41.6	- 1.530	23	8 27 06.85	+ 2.4614	N.14 44 04.5	- 7.056
SUNDAY 6.					TUESDAY 8.				
0	6 28 24.65	+ 2.5637	N.18 15 05.9	- 1.658	0	8 29 34.43	+ 2.4578	N.14 36 58.3	- 7.150
1	6 30 58.47	2.5635	18 13 22.6	1.786	1	8 32 01.79	2.4542	14 29 46.5	7.243
2	6 33 32.27	2.5631	18 11 31.6	1.914	2	8 34 28.94	2.4506	14 22 29.1	7.336
3	6 36 06.04	2.5625	18 09 32.9	2.041	3	8 36 55.86	2.4469	14 15 06.2	7.427
4	6 38 39.77	2.5619	18 07 26.7	2.168	4	8 39 22.57	2.4433	14 07 37.9	7.516
5	6 41 13.47	2.5612	18 05 12.8	2.295	5	8 41 49.06	2.4396	14 00 04.3	7.604
6	6 43 47.12	2.5603	18 02 51.3	2.421	6	8 44 15.32	2.4358	13 52 25.4	7.692
7	6 46 20.71	2.5594	18 00 22.3	2.547	7	8 46 41.36	2.4321	13 44 41.3	7.778
8	6 48 54.25	2.5585	17 57 45.7	2.673	8	8 49 07.17	2.4283	13 36 52.1	7.863
9	6 51 27.73	2.5574	17 55 01.5	2.798	9	8 51 32.76	2.4246	13 28 57.7	7.948
10	6 54 01.14	2.5563	17 52 09.9	2.923	10	8 53 58.12	2.4208	13 20 58.3	8.031
11	6 56 34.48	2.5550	17 49 10.8	3.048	11	8 56 23.25	2.4170	13 12 54.0	8.112
12	6 59 07.74	2.5537	17 46 04.2	3.172	12	8 58 48.16	2.4132	13 04 44.9	8.192
13	7 01 40.92	2.5522	17 42 50.2	3.295	13	9 01 12.83	2.4093	12 56 31.0	8.272
14	7 04 14.00	2.5506	17 39 28.8	3.418	14	9 03 37.28	2.4055	12 48 12.3	8.350
15	7 06 46.99	2.5491	17 36 00.0	3.541	15	9 06 01.49	2.4017	12 39 49.0	8.426
16	7 09 19.89	2.5474	17 32 23.9	3.662	16	9 08 25.48	2.3978	12 31 21.2	8.502
17	7 11 52.68	2.5457	17 28 40.5	3.783	17	9 10 49.23	2.3939	12 22 48.8	8.577
18	7 14 25.37	2.5438	17 24 49.9	3.904	18	9 13 12.75	2.3901	12 14 12.0	8.650
19	7 16 57.94	2.5418	17 20 52.0	4.025	19	9 15 36.04	2.3863	12 05 30.8	8.722
20	7 19 30.39	2.5397	17 16 46.9	4.144	20	9 17 59.10	2.3824	11 56 45.3	8.793
21	7 22 02.71	2.5377	17 12 34.7	4.263	21	9 20 21.93	2.3785	11 47 55.6	8.863
22	7 24 34.91	2.5356	17 08 15.3	4.382	22	9 22 44.52	2.3747	11 39 01.8	8.931
23	7 27 06.98	2.5333	17 03 48.9	4.498	23	9 25 06.89	2.3708	11 30 03.9	8.998
24	7 29 38.91	+ 2.5310	N.16 59 15.5	- 4.615	24	9 27 29.02	+ 2.3669	N.11 21 02.0	- 9.064

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
WEDNESDAY 9.					FRIDAY 11.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
1	9 27 29.02	+ 2.3669	N. 11 21 02.0	- 9.064	1	11 17 04.01	+ 2.2110	N. 3 12 31.6	- 10.845
2	9 29 50.92	2.3632	11 11 56.2	9.129	2	11 19 16.60	2.2087	3 01 40.6	10.855
3	9 32 12.60	2.3593	11 02 46.5	9.193	3	11 21 29.05	2.2063	2 50 49.0	10.863
4	9 34 34.04	2.3555	10 53 33.1	9.255	4	11 23 41.36	2.2041	2 39 57.0	10.870
5	9 36 55.26	2.3518	10 44 15.9	9.317	5	11 25 53.54	2.2019	2 29 04.6	10.877
6	9 39 16.25	2.3479	10 34 55.1	9.377	6	11 28 05.59	2.1998	2 18 11.8	10.883
7	9 41 37.01	2.3442	10 25 30.7	9.435	7	11 30 17.51	2.1976	2 07 18.7	10.887
8	9 43 57.55	2.3404	10 16 02.9	9.493	8	11 32 29.30	2.1955	1 56 25.4	10.890
9	9 46 17.86	2.3367	10 06 31.6	9.550	9	11 34 40.97	2.1934	1 45 31.9	10.893
10	9 48 37.95	2.3329	9 56 56.9	9.605	10	11 36 52.51	2.1914	1 34 38.3	10.893
11	9 50 57.81	2.3293	9 47 19.0	9.658	11	11 39 03.94	2.1896	1 23 44.7	10.893
12	9 53 17.46	2.3256	9 37 37.9	9.711	12	11 41 15.26	2.1877	1 12 51.1	10.893
13	9 55 36.88	2.3218	9 27 53.7	9.763	13	11 43 26.46	2.1858	1 01 57.5	10.892
14	9 57 56.08	2.3182	9 18 06.4	9.813	14	11 45 37.55	2.1840	0 51 04.1	10.888
15	10 00 15.07	2.3147	9 08 16.2	9.862	15	11 47 48.54	2.1823	0 40 10.9	10.885
16	10 02 33.84	2.3111	8 58 23.0	9.910	16	11 49 59.42	2.1805	0 29 17.9	10.881
17	10 04 52.40	2.3075	8 48 27.0	9.957	17	11 52 10.20	2.1788	0 18 25.2	10.875
18	10 07 10.74	2.3039	8 38 28.2	10.003	18	11 54 20.88	2.1772	N. 0 07 32.9	10.868
19	10 09 28.87	2.3004	8 28 26.7	10.048	19	11 56 31.46	2.1756	S. 0 03 19.0	10.861
20	10 11 46.79	2.2969	8 18 22.5	10.091	20	11 58 41.95	2.1741	0 14 10.4	10.853
21	10 14 04.50	2.2934	8 08 15.8	10.133	21	12 00 52.35	2.1726	0 25 01.3	10.843
22	10 16 22.00	2.2900	7 58 06.6	10.173	22	12 03 02.66	2.1712	0 35 51.6	10.833
23	10 18 39.30	2.2867	7 47 55.0	10.212	23	12 05 12.89	2.1698	0 46 41.2	10.821
24	10 20 56.40	+ 2.2833	N. 7 37 41.1	- 10.251	24	12 07 23.03	+ 2.1683	S. 0 57 30.1	- 10.808
THURSDAY 10.					SATURDAY 12.				
0	10 23 13.29	+ 2.2798	N. 7 27 24.9	- 10.288	0	12 09 33.09	+ 2.1670	S. 1 08 18.2	- 10.795
1	10 25 29.98	2.2766	7 17 06.5	10.324	1	12 11 43.07	2.1658	1 19 05.5	10.782
2	10 27 46.48	2.2733	7 06 46.0	10.359	2	12 13 52.98	2.1646	1 29 52.0	10.767
3	10 30 02.78	2.2701	6 56 23.4	10.393	3	12 16 02.82	2.1634	1 40 37.5	10.750
4	10 32 18.89	2.2669	6 45 58.8	10.426	4	12 18 12.59	2.1623	1 51 22.0	10.733
5	10 34 34.81	2.2638	6 35 32.3	10.458	5	12 20 22.29	2.1612	2 02 05.4	10.715
6	10 36 50.54	2.2606	6 25 03.9	10.488	6	12 22 31.93	2.1601	2 12 47.8	10.697
7	10 39 06.08	2.2575	6 14 33.7	10.518	7	12 24 41.50	2.1591	2 23 29.0	10.677
8	10 41 21.44	2.2544	6 04 01.8	10.546	8	12 26 51.02	2.1582	2 34 09.0	10.656
9	10 43 36.61	2.2514	5 53 28.2	10.573	9	12 29 00.48	2.1572	2 44 47.7	10.634
10	10 45 51.61	2.2485	5 42 53.0	10.599	10	12 31 09.88	2.1563	2 55 25.1	10.612
11	10 48 06.43	2.2455	5 32 16.3	10.623	11	12 33 19.24	2.1555	3 06 01.1	10.588
12	10 50 21.07	2.2426	5 21 38.2	10.647	12	12 35 28.54	2.1547	3 16 35.6	10.563
13	10 52 35.54	2.2398	5 10 58.7	10.669	13	12 37 37.80	2.1540	3 27 08.7	10.539
14	10 54 49.84	2.2369	5 00 17.9	10.691	14	12 39 47.02	2.1533	3 37 40.3	10.513
15	10 57 03.97	2.2341	4 49 35.8	10.711	15	12 41 56.19	2.1526	3 48 10.2	10.485
16	10 59 17.93	2.2314	4 38 52.6	10.730	16	12 44 05.33	2.1520	3 58 38.5	10.458
17	11 01 31.74	2.2287	4 28 08.2	10.748	17	12 46 14.43	2.1513	4 09 05.2	10.430
18	11 03 45.38	2.2260	4 17 22.8	10.765	18	12 48 23.49	2.1508	4 19 30.1	10.400
19	11 05 58.86	2.2234	4 06 36.4	10.782	19	12 50 32.53	2.1503	4 29 53.2	10.370
20	11 08 12.19	2.2209	3 55 49.0	10.797	20	12 52 41.53	2.1498	4 40 14.5	10.339
21	11 10 25.37	2.2184	3 45 00.8	10.810	21	12 54 50.51	2.1494	4 50 33.9	10.307
22	11 12 38.40	2.2159	3 34 11.8	10.823	22	12 56 59.46	2.1489	5 00 51.3	10.273
23	11 14 51.28	2.2134	3 23 22.0	10.835	23	12 59 08.38	2.1486	5 11 06.7	10.240
24	11 17 04.01	+ 2.2110	N. 3 12 31.6	- 10.845	24	13 01 17.29	+ 2.1483	S. 5 21 20.1	- 10.206

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
SUNDAY 13.					TUESDAY 15.				
0	13 01 17.29	+ 2.1483	S. 5 21 20.1	- 10.206	0	14 44 36.32	+ 2.1650	S. 12 36 28.5	- 7.645
1	13 03 26.18	2.1480	5 31 31.4	10.170	1	14 46 46.24	2.1658	12 44 05.1	7.574
2	13 05 35.05	2.1478	5 41 40.5	10.133	2	14 48 56.21	2.1666	12 51 37.4	7.503
3	13 07 43.91	2.1476	5 51 47.4	10.097	3	14 51 06.23	2.1673	12 59 05.5	7.432
4	13 09 52.76	2.1474	6 01 52.1	10.059	4	14 53 16.29	2.1680	13 06 29.3	7.360
5	13 12 01.60	2.1473	6 11 54.5	10.020	5	14 55 26.39	2.1688	13 13 48.7	7.288
6	13 14 10.43	2.1472	6 21 54.5	9.980	6	14 57 36.54	2.1695	13 21 03.8	7.214
7	13 16 19.26	2.1471	6 31 52.1	9.940	7	14 59 46.73	2.1703	13 28 14.4	7.140
8	13 18 28.08	2.1470	6 41 47.3	9.899	8	15 01 56.97	2.1711	13 35 20.6	7.067
9	13 20 36.90	2.1470	6 51 40.0	9.858	9	15 04 07.26	2.1718	13 42 22.4	6.992
10	13 22 45.72	2.1470	7 01 30.2	9.815	10	15 06 17.59	2.1725	13 49 19.6	6.916
11	13 24 54.54	2.1470	7 11 17.8	9.773	11	15 08 27.96	2.1733	13 56 12.3	6.839
12	13 27 03.36	2.1471	7 21 02.7	9.727	12	15 10 38.38	2.1740	14 03 00.3	6.763
13	13 29 12.19	2.1473	7 30 45.0	9.682	13	15 12 48.84	2.1748	14 09 43.8	6.686
14	13 31 21.03	2.1474	7 40 24.5	9.636	14	15 14 59.35	2.1755	14 16 22.6	6.608
15	13 33 29.88	2.1476	7 50 01.3	9.589	15	15 17 09.90	2.1762	14 22 56.8	6.531
16	13 35 38.74	2.1478	7 59 35.2	9.542	16	15 19 20.49	2.1768	14 29 26.3	6.452
17	13 37 47.61	2.1480	8 09 06.3	9.494	17	15 21 31.12	2.1776	14 35 51.0	6.373
18	13 39 56.50	2.1483	8 18 34.5	9.445	18	15 23 41.80	2.1783	14 42 11.0	6.293
19	13 42 05.40	2.1485	8 27 59.7	9.395	19	15 25 52.51	2.1789	14 48 26.1	6.213
20	13 44 14.32	2.1488	8 37 21.9	9.345	20	15 28 03.27	2.1797	14 54 36.5	6.132
21	13 46 23.26	2.1492	8 46 41.1	9.293	21	15 30 14.07	2.1803	15 00 42.0	6.051
22	13 48 32.22	2.1495	8 55 57.1	9.241	22	15 32 24.91	2.1810	15 06 42.6	5.969
23	13 50 41.20	+ 2.1499	S. 9 05 10.0	- 9.189	23	15 34 35.79	+ 2.1816	S. 15 12 38.3	- 5.887
MONDAY 14.					WEDNESDAY 16.				
0	13 52 50.21	+ 2.1503	S. 9 14 19.8	- 9.136	0	15 36 46.70	+ 2.1822	S. 15 18 29.1	- 5.805
1	13 54 59.24	2.1508	9 23 26.3	9.082	1	15 38 57.65	2.1828	15 24 14.9	5.723
2	13 57 08.30	2.1512	9 32 29.6	9.027	2	15 41 08.64	2.1834	15 29 55.8	5.639
3	13 59 17.38	2.1517	9 41 29.5	8.971	3	15 43 19.66	2.1839	15 35 31.6	5.555
4	14 01 26.50	2.1522	9 50 26.1	8.915	4	15 45 30.71	2.1845	15 41 02.4	5.471
5	14 03 35.64	2.1526	9 59 19.3	8.858	5	15 47 41.80	2.1851	15 46 28.1	5.386
6	14 05 44.81	2.1532	10 08 09.0	8.800	6	15 49 52.92	2.1856	15 51 48.7	5.301
7	14 07 54.02	2.1538	10 16 55.3	8.742	7	15 52 04.07	2.1861	15 57 04.2	5.216
8	14 10 03.26	2.1543	10 25 38.0	8.683	8	15 54 15.25	2.1866	16 02 14.6	5.130
9	14 12 12.53	2.1548	10 34 17.2	8.623	9	15 56 26.46	2.1871	16 07 19.8	5.044
10	14 14 21.84	2.1555	10 42 52.7	8.562	10	15 58 37.70	2.1875	16 12 19.9	4.958
11	14 16 31.19	2.1561	10 51 24.6	8.501	11	16 00 48.96	2.1878	16 17 14.8	4.871
12	14 18 40.57	2.1567	10 59 52.8	8.439	12	16 03 00.24	2.1882	16 22 04.4	4.783
13	14 20 49.99	2.1573	11 08 17.3	8.377	13	16 05 11.55	2.1886	16 26 48.8	4.696
14	14 22 59.45	2.1580	11 16 38.0	8.313	14	16 07 22.87	2.1889	16 31 27.9	4.608
15	14 25 08.95	2.1587	11 24 54.8	8.248	15	16 09 34.22	2.1893	16 36 01.8	4.520
16	14 27 18.49	2.1593	11 33 07.8	8.184	16	16 11 45.59	2.1897	16 40 30.3	4.432
17	14 29 28.07	2.1600	11 41 16.9	8.119	17	16 13 56.98	2.1899	16 44 53.6	4.343
18	14 31 37.69	2.1608	11 49 22.1	8.053	18	16 16 08.38	2.1901	16 49 11.5	4.253
19	14 33 47.36	2.1614	11 57 23.3	7.987	19	16 18 19.79	2.1903	16 53 24.0	4.164
20	14 35 57.06	2.1621	12 05 20.5	7.920	20	16 20 31.21	2.1905	16 57 31.2	4.075
21	14 38 06.81	2.1628	12 13 13.7	7.852	21	16 22 42.65	2.1907	17 01 33.0	3.984
22	14 40 16.60	2.1636	12 21 02.8	7.783	22	16 24 54.10	2.1908	17 05 29.3	3.894
23	14 42 26.44	2.1643	12 28 47.7	7.714	23	16 27 05.55	2.1909	17 09 20.3	3.805
24	14 44 36.32	+ 2.1650	S. 12 36 28.5	- 7.645	24	16 29 17.01	+ 2.1910	S. 17 13 05.9	- 3.714

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
THURSDAY 17.					SATURDAY 19.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
1	16 29 17.01	+ 2.1910	S. 17 13 05.9	- 3.714	1	18 13 54.46	+ 2.1548	S. 18 24 51.7	+ 0.718
2	16 31 28.47	2.1911	17 16 46.0	3.623	2	18 16 03.70	2.1532	18 24 05.9	0.868
3	16 33 39.94	2.1911	17 20 20.6	3.532	3	18 18 12.84	2.1515	18 23 14.7	0.898
4	16 35 51.40	2.1910	17 23 49.8	3.441	4	18 20 21.88	2.1498	18 22 18.1	0.968
5	16 38 02.86	2.1910	17 27 13.5	3.349	5	18 22 30.82	2.1482	18 21 16.2	1.077
6	16 40 14.32	2.1910	17 30 31.7	3.258	6	18 24 39.66	2.1465	18 20 08.9	1.166
7	16 42 25.78	2.1908	17 33 44.4	3.166	7	18 26 48.40	2.1447	18 18 56.3	1.235
8	16 44 37.22	2.1907	17 36 51.6	3.073	8	18 28 57.02	2.1428	18 17 38.3	1.343
9	16 46 48.66	2.1906	17 39 53.2	2.981	9	18 31 05.54	2.1410	18 16 15.1	1.431
10	16 49 00.09	2.1903	17 42 49.3	2.889	10	18 33 13.94	2.1392	18 14 46.6	1.519
11	16 51 11.50	2.1901	17 45 39.9	2.797	11	18 35 22.24	2.1373	18 13 12.8	1.607
12	16 53 22.90	2.1898	17 48 24.9	2.703	12	18 37 30.42	2.1353	18 11 33.8	1.694
13	16 55 34.28	2.1895	17 51 04.3	2.611	13	18 39 38.48	2.1334	18 09 49.5	1.782
14	16 57 45.64	2.1892	17 53 38.2	2.518	14	18 41 46.43	2.1315	18 08 00.0	1.868
15	16 59 56.98	2.1888	17 56 06.5	2.426	15	18 43 54.26	2.1295	18 06 05.4	1.953
16	17 02 08.30	2.1884	17 58 29.3	2.333	16	18 46 01.97	2.1274	18 04 05.6	2.039
17	17 04 19.59	2.1879	18 00 46.4	2.239	17	18 48 09.55	2.1254	18 02 00.7	2.125
18	17 06 30.85	2.1875	18 02 58.0	2.147	18	18 50 17.02	2.1234	17 59 50.6	2.211
19	17 08 42.09	2.1870	18 05 04.0	2.053	19	18 52 24.36	2.1213	17 57 35.4	2.296
20	17 10 53.29	2.1864	18 07 04.4	1.960	20	18 54 31.57	2.1192	17 55 15.1	2.380
21	17 13 04.46	2.1858	18 08 59.2	1.867	21	18 56 38.66	2.1171	17 52 49.8	2.464
22	17 15 15.59	2.1852	18 10 48.4	1.773	22	18 58 45.62	2.1149	17 50 19.4	2.548
23	17 17 26.68	2.1845	18 12 32.0	1.681	23	19 00 52.45	2.1127	17 47 44.1	2.631
24	17 19 37.73	+ 2.1838	S. 18 14 10.1	- 1.588	24	19 02 59.14	+ 2.1105	S. 17 45 03.7	+ 2.714
FRIDAY 18.					SUNDAY 20.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
1	17 21 48.74	+ 2.1831	S. 18 15 42.5	- 1.493	1	19 05 05.71	+ 2.1083	S. 17 42 18.4	+ 2.796
2	17 23 59.70	2.1823	18 17 09.3	1.400	2	19 07 12.14	2.1061	17 39 28.2	2.878
3	17 26 10.62	2.1816	18 18 30.5	1.308	3	19 09 18.44	2.1038	17 36 33.0	2.961
4	17 28 21.49	2.1807	18 19 46.2	1.214	4	19 11 24.60	2.1015	17 33 32.9	3.042
5	17 30 32.30	2.1798	18 20 56.2	1.121	5	19 13 30.62	2.0992	17 30 28.0	3.122
6	17 32 43.06	2.1789	18 22 00.7	1.027	6	19 15 36.51	2.0969	17 27 18.3	3.203
7	17 34 53.77	2.1780	18 22 59.5	0.934	7	19 17 42.25	2.0946	17 24 03.7	3.283
8	17 37 04.42	2.1770	18 23 52.8	0.842	8	19 19 47.86	2.0923	17 20 44.4	3.362
9	17 39 15.01	2.1759	18 24 40.5	0.749	9	19 21 53.32	2.0899	17 17 20.3	3.442
10	17 41 25.53	2.1748	18 25 22.7	0.657	10	19 23 58.65	2.0876	17 13 51.4	3.520
11	17 43 35.99	2.1738	18 25 59.3	0.563	11	19 26 03.83	2.0852	17 10 17.9	3.598
12	17 45 46.39	2.1727	18 26 30.3	0.471	12	19 28 08.87	2.0828	17 06 39.6	3.677
13	17 47 56.71	2.1714	18 26 55.8	0.378	13	19 30 13.76	2.0803	17 02 56.7	3.753
14	17 50 06.96	2.1702	18 27 15.7	0.286	14	19 32 18.51	2.0779	16 59 09.2	3.830
15	17 52 17.14	2.1691	18 27 30.1	0.194	15	19 34 23.11	2.0754	16 55 17.1	3.907
16	17 54 27.25	2.1678	18 27 39.0	0.102	16	19 36 27.56	2.0730	16 51 20.4	3.983
17	17 56 37.27	2.1664	18 27 42.3	- 0.010	17	19 38 31.87	2.0706	16 47 19.1	4.058
18	17 58 47.22	2.1652	18 27 40.2	+ 0.082	18	19 40 36.03	2.0682	16 43 13.4	4.133
19	18 00 57.09	2.1638	18 27 32.5	0.174	19	19 42 40.05	2.0657	16 39 03.2	4.207
20	18 03 06.87	2.1623	18 27 19.3	0.265	20	19 44 43.91	2.0632	16 34 48.5	4.282
21	18 05 16.57	2.1609	18 27 00.7	0.356	21	19 46 47.63	2.0608	16 30 29.4	4.355
22	18 07 26.18	2.1594	18 26 36.6	0.447	22	19 48 51.20	2.0583	16 26 05.9	4.428
23	18 09 35.70	2.1579	18 26 07.1	0.537	23	19 50 54.62	2.0558	16 21 38.0	4.501
24	18 11 45.13	2.1563	18 25 32.1	0.628	24	19 52 57.89	2.0533	16 17 05.8	4.573
	18 13 54.46	+ 2.1548	S. 18 24 51.7	+ 0.718		19 55 01.01	+ 2.0508	S. 16 12 29.3	+ 4.644

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
MONDAY 21.					WEDNESDAY 23.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
0	19 55 01.01	+ 2.0508	S. 16 12 29.3	+ 4.644	0	21 30 41.38	+ 1.9410	S. 11 16 50.5	+ 7.473
1	19 57 03.98	2.0483	16 07 48.5	4.716	1	21 32 37.79	1.9392	11 09 20.7	7.520
2	19 59 06.80	2.0458	16 03 03.4	4.786	2	21 34 34.09	1.9374	11 01 48.1	7.566
3	20 01 09.47	2.0433	15 58 14.2	4.856	3	21 36 30.28	1.9357	10 54 12.8	7.611
4	20 03 11.99	2.0408	15 53 20.7	4.926	4	21 38 26.37	1.9340	10 46 34.8	7.655
5	20 05 14.36	2.0383	15 48 23.1	4.995	5	21 40 22.36	1.9323	10 38 54.2	7.699
6	20 07 16.58	2.0358	15 43 21.3	5.063	6	21 42 18.24	1.9306	10 31 10.9	7.743
7	20 09 18.65	2.0333	15 38 15.5	5.131	7	21 44 14.03	1.9290	10 23 25.0	7.787
8	20 11 20.57	2.0308	15 33 05.6	5.199	8	21 46 09.72	1.9274	10 15 36.5	7.829
9	20 13 22.35	2.0283	15 27 51.6	5.266	9	21 48 05.32	1.9258	10 07 45.5	7.871
10	20 15 23.97	2.0258	15 22 33.7	5.333	10	21 50 00.82	1.9243	9 59 52.0	7.913
11	20 17 25.45	2.0233	15 17 11.7	5.399	11	21 51 56.23	1.9228	9 51 56.0	7.953
12	20 19 26.77	2.0208	15 11 45.8	5.464	12	21 53 51.56	1.9214	9 43 57.6	7.994
13	20 21 27.94	2.0183	15 06 16.0	5.529	13	21 55 46.80	1.9199	9 35 56.7	8.034
14	20 23 28.97	2.0159	15 00 42.3	5.593	14	21 57 41.95	1.9185	9 27 53.5	8.073
15	20 25 29.85	2.0135	14 55 04.8	5.658	15	21 59 37.02	1.9172	9 19 47.9	8.113
16	20 27 30.59	2.0111	14 49 23.4	5.722	16	22 01 32.01	1.9158	9 11 39.9	8.153
17	20 29 31.18	2.0086	14 43 38.2	5.784	17	22 03 26.92	1.9146	9 03 29.6	8.190
18	20 31 31.62	2.0061	14 37 49.3	5.846	18	22 05 21.76	1.9133	8 55 17.1	8.227
19	20 33 31.91	2.0037	14 31 56.7	5.908	19	22 07 16.52	1.9121	8 47 02.4	8.264
20	20 35 32.06	2.0013	14 26 00.4	5.969	20	22 09 11.21	1.9109	8 38 45.4	8.302
21	20 37 32.07	1.9990	14 20 00.4	6.030	21	22 11 05.83	1.9097	8 30 26.2	8.338
22	20 39 31.94	1.9966	14 13 56.8	6.091	22	22 13 00.38	1.9087	8 22 04.9	8.373
23	20 41 31.66	+ 1.9942	S. 14 07 49.5	+ 6.151	23	22 14 54.87	+ 1.9077	S. 8 13 41.5	+ 8.408
TUESDAY 22.					THURSDAY 24.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
0	20 43 31.24	+ 1.9918	S. 14 01 38.7	+ 6.209	0	22 16 49.30	+ 1.9067	S. 8 05 16.0	+ 8.443
1	20 45 30.68	1.9895	13 55 24.4	6.268	1	22 18 43.67	1.9057	7 56 48.4	8.477
2	20 47 29.98	1.9872	13 49 06.5	6.327	2	22 20 37.98	1.9047	7 48 18.8	8.510
3	20 49 29.14	1.9848	13 42 45.2	6.384	3	22 22 32.23	1.9038	7 39 47.2	8.543
4	20 51 28.16	1.9825	13 36 20.4	6.442	4	22 24 26.43	1.9029	7 31 13.6	8.576
5	20 53 27.04	1.9803	13 29 52.2	6.498	5	22 26 20.58	1.9021	7 22 38.1	8.608
6	20 55 25.79	1.9780	13 23 20.6	6.554	6	22 28 14.68	1.9013	7 14 00.6	8.640
7	20 57 24.40	1.9758	13 16 45.7	6.609	7	22 30 08.74	1.9007	7 05 21.3	8.671
8	20 59 22.88	1.9736	13 10 07.5	6.664	8	22 32 02.76	1.8999	6 56 40.1	8.702
9	21 01 21.23	1.9713	13 03 26.0	6.718	9	22 33 56.73	1.8992	6 47 57.1	8.732
10	21 03 19.44	1.9692	12 56 41.3	6.773	10	22 35 50.66	1.8986	6 39 12.3	8.762
11	21 05 17.53	1.9670	12 49 53.1	6.827	11	22 37 44.56	1.8981	6 30 25.7	8.790
12	21 07 15.48	1.9648	12 43 02.1	6.879	12	22 39 38.43	1.8976	6 21 37.5	8.818
13	21 09 13.31	1.9628	12 36 07.8	6.932	13	22 41 32.27	1.8971	6 12 47.5	8.847
14	21 11 11.01	1.9607	12 29 10.3	6.984	14	22 43 26.08	1.8967	6 03 55.8	8.875
15	21 13 08.59	1.9586	12 22 09.7	7.035	15	22 45 19.87	1.8962	5 55 02.5	8.902
16	21 15 06.04	1.9565	12 15 06.1	7.086	16	22 47 13.63	1.8958	5 46 07.6	8.928
17	21 17 03.37	1.9545	12 07 59.4	7.136	17	22 49 07.37	1.8956	5 37 11.1	8.955
18	21 19 00.58	1.9525	12 00 49.8	7.186	18	22 51 01.10	1.8953	5 28 13.0	8.981
19	21 21 57.67	1.9505	11 53 37.1	7.235	19	22 52 54.81	1.8951	5 19 13.4	9.006
20	21 22 54.64	1.9486	11 46 21.6	7.283	20	22 54 48.51	1.8949	5 10 12.3	9.031
21	21 24 51.50	1.9467	11 39 03.1	7.332	21	22 56 42.20	1.8948	5 01 09.7	9.055
22	21 26 48.24	1.9448	11 31 41.7	7.380	22	22 58 35.89	1.8948	4 52 05.7	9.079
23	21 28 44.87	1.9428	11 24 17.5	7.427	23	23 00 29.58	1.8948	4 43 00.2	9.103
24	21 30 41.38	+ 1.9410	S. 11 16 50.5	+ 7.473	24	23 02 23.26	+ 1.8948	S. 4 33 53.4	+ 9.125

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
FRIDAY 25.					SUNDAY 27.				
0	23 02 23.26	+ 1.8948	S. 4 33 53.4	+ 9.125	0	0 34 18.65	+ 1.9554	N. 3 00 43.5	+ 9.610
1	23 04 16.95	1.8948	4 24 45.2	9.148	1	0 36 16.05	1.9580	3 10 20.0	9.607
2	23 06 10.64	1.8949	4 15 35.7	9.170	2	0 38 13.61	1.9606	3 19 56.3	9.605
3	23 08 04.34	1.8951	4 06 24.8	9.192	3	0 40 11.32	1.9633	3 29 32.3	9.598
4	23 09 58.05	1.8953	3 57 12.7	9.212	4	0 42 09.20	1.9660	3 39 08.0	9.592
5	23 11 51.78	1.8957	3 47 59.4	9.232	5	0 44 07.24	1.9688	3 48 43.3	9.585
6	23 13 45.53	1.8959	3 38 44.9	9.252	6	0 46 05.45	1.9717	3 58 18.2	9.578
7	23 15 39.29	1.8962	3 29 29.2	9.272	7	0 48 03.84	1.9746	4 07 52.6	9.570
8	23 17 33.08	1.8967	3 20 12.3	9.291	8	0 50 02.40	1.9774	4 17 26.6	9.562
9	23 19 26.89	1.8971	3 10 54.3	9.309	9	0 52 01.13	1.9804	4 27 00.1	9.553
10	23 21 20.73	1.8976	3 01 35.2	9.327	10	0 54 00.05	1.9836	4 36 33.0	9.544
11	23 23 14.60	1.8982	2 52 15.1	9.343	11	0 55 59.16	1.9867	4 46 05.4	9.533
12	23 25 08.51	1.8988	2 42 54.0	9.360	12	0 57 58.45	1.9898	4 55 37.0	9.522
13	23 27 02.46	1.8995	2 33 31.49	9.377	13	0 59 57.93	1.9930	5 05 08.0	9.510
14	23 28 56.45	1.9002	2 24 08.8	9.393	14	1 01 57.61	1.9963	5 14 38.2	9.498
15	23 30 50.48	1.9009	2 14 44.7	9.408	15	1 03 57.49	1.9997	5 24 07.7	9.485
16	23 32 44.56	1.9017	2 05 19.8	9.423	16	1 05 57.57	2.0030	5 33 36.4	9.472
17	23 34 38.69	1.9026	1 55 54.0	9.438	17	1 07 57.85	2.0064	5 43 04.3	9.457
18	23 36 32.87	1.9035	1 46 27.3	9.451	18	1 09 58.34	2.0099	5 52 31.2	9.441
19	23 38 27.11	1.9045	1 36 59.9	9.463	19	1 11 59.04	2.0135	6 01 57.2	9.425
20	23 40 21.41	1.9055	1 27 31.7	9.477	20	1 13 59.96	2.0171	6 11 22.2	9.408
21	23 42 15.77	1.9066	1 18 02.7	9.489	21	1 16 01.09	2.0207	6 20 46.2	9.391
22	23 44 10.20	1.9077	1 08 33.0	9.501	22	1 18 02.44	2.0244	6 30 09.1	9.373
23	23 46 04.69	+ 1.9088	S. 0 59 02.6	+ 9.512	23	1 20 04.02	+ 2.0282	N. 6 39 30.9	+ 9.353
SATURDAY 26.					MONDAY 28.				
0	23 47 59.25	+ 1.9100	S. 0 49 31.6	+ 9.523	0	1 22 05.82	+ 2.0319	N. 6 48 51.5	+ 9.333
1	23 49 53.89	1.9113	0 39 59.9	9.533	1	1 24 07.85	2.0358	6 58 10.9	9.313
2	23 51 48.61	1.9127	0 30 27.7	9.542	2	1 26 10.12	2.0398	7 07 29.1	9.292
3	23 53 43.41	1.9140	0 20 54.9	9.551	3	1 28 12.62	2.0437	7 16 45.9	9.269
4	23 55 38.29	1.9154	0 11 21.6	9.559	4	1 30 15.36	2.0477	7 26 01.4	9.247
5	23 57 33.26	1.9169	S. 0 01 47.8	9.568	5	1 32 18.34	2.0517	7 35 15.5	9.223
6	23 59 28.32	1.9185	N. 0 07 46.5	9.575	6	1 34 21.56	2.0558	7 44 28.2	9.198
7	0 01 23.48	1.9202	0 17 21.2	9.582	7	1 36 25.03	2.0600	7 53 39.3	9.173
8	0 03 18.74	1.9218	0 26 56.3	9.588	8	1 38 28.76	2.0642	8 02 48.9	9.147
9	0 05 14.09	1.9234	0 36 31.7	9.593	9	1 40 32.74	2.0684	8 11 56.9	9.120
10	0 07 09.55	1.9252	0 46 07.5	9.599	10	1 42 36.97	2.0727	8 21 03.3	9.092
11	0 09 05.11	1.9270	0 55 43.6	9.603	11	1 44 41.46	2.0771	8 30 07.9	9.063
12	0 11 00.79	1.9289	1 05 19.9	9.608	12	1 46 46.22	2.0815	8 39 10.8	9.033
13	0 12 56.58	1.9308	1 14 56.5	9.611	13	1 48 51.24	2.0859	8 48 11.9	9.003
14	0 14 52.48	1.9327	1 24 33.2	9.613	14	1 50 56.53	2.0904	8 57 11.1	8.972
15	0 16 48.50	1.9348	1 34 10.1	9.616	15	1 53 02.09	2.0949	9 06 08.5	8.940
16	0 18 44.65	1.9369	1 43 47.1	9.618	16	1 55 07.92	2.0995	9 15 03.9	8.907
17	0 20 40.93	1.9390	1 53 24.2	9.619	17	1 57 14.03	2.1042	9 23 57.3	8.873
18	0 22 37.33	1.9411	2 03 01.4	9.620	18	1 59 20.42	2.1088	9 32 48.6	8.837
19	0 24 33.86	1.9434	2 12 38.6	9.620	19	2 01 27.09	2.1135	9 41 37.8	8.801
20	0 26 30.54	1.9457	2 22 15.8	9.619	20	2 03 34.04	2.1183	9 50 24.8	8.765
21	0 28 27.35	1.9480	2 31 52.9	9.618	21	2 05 41.28	2.1231	9 59 09.6	8.728
22	0 30 24.30	1.9504	2 41 29.9	9.616	22	2 07 48.81	2.1279	10 07 52.1	8.688
23	0 32 21.40	1.9529	2 51 06.8	9.613	23	2 09 56.63	2.1328	10 16 32.2	8.648
24	0 34 18.65	+ 1.9554	N. 3 00 43.5	+ 9.610	24	2 12 04.74	+ 2.1377	N. 10 25 09.9	+ 8.608

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
TUESDAY 29.					THURSDAY 31.				
	<div>h m s</div>	<div>+</div>	<div>N. ° ' "</div>	<div>"</div>		<div>h m s</div>	<div>+</div>	<div>N. ° ' "</div>	<div>"</div>
0	2 12 04.74	+ 2.1377	N. 10 25 09.9	+ 8.608	0	4 00 53.17	+ 2.4008	N. 16 12 00.2	+ 5.422
1	2 14 13.15	2.1427	10 33 45.2	8.567	1	4 03 17.38	2.4063	16 17 22.7	5.328
2	2 16 21.86	2.1477	10 42 17.9	8.524	2	4 05 41.92	2.4117	16 22 39.5	5.233
3	2 18 30.87	2.1527	10 50 48.1	8.482	3	4 08 06.78	2.4170	16 27 50.6	5.136
4	2 20 40.18	2.1578	10 59 15.7	8.438	4	4 10 31.96	2.4224	16 32 55.8	5.038
5	2 22 49.80	2.1629	11 07 40.6	8.392	5	4 12 57.47	2.4278	16 37 55.2	4.941
6	2 24 59.73	2.1680	11 16 02.7	8.345	6	4 15 23.30	2.4331	16 42 48.7	4.842
7	2 27 09.96	2.1732	11 24 22.0	8.298	7	4 17 49.44	2.4383	16 47 36.2	4.741
8	2 29 20.51	2.1784	11 32 38.4	8.249	8	4 20 15.90	2.4437	16 52 17.6	4.639
9	2 31 31.37	2.1837	11 40 51.9	8.200	9	4 22 42.68	2.4488	16 56 52.9	4.537
10	2 33 42.55	2.1890	11 49 02.4	8.149	10	4 25 09.76	2.4539	17 01 22.1	4.434
11	2 35 54.05	2.1943	11 57 09.8	8.098	11	4 27 37.15	2.4590	17 05 45.0	4.328
12	2 38 05.86	2.1996	12 05 14.1	8.045	12	4 30 04.84	2.4641	17 10 01.5	4.223
13	2 40 18.00	2.2050	12 13 15.2	7.992	13	4 32 32.84	2.4692	17 14 11.7	4.117
14	2 42 30.46	2.2103	12 21 13.1	7.938	14	4 35 01.14	2.4741	17 18 15.5	4.008
15	2 44 43.24	2.2157	12 29 07.7	7.882	15	4 37 29.73	2.4790	17 22 12.7	3.899
16	2 46 56.34	2.2212	12 36 58.9	7.825	16	4 39 58.62	2.4838	17 26 03.4	3.790
17	2 49 09.78	2.2267	12 44 46.7	7.768	17	4 42 27.79	2.4886	17 29 47.5	3.679
18	2 51 23.55	2.2322	12 52 31.0	7.708	18	4 44 57.25	2.4933	17 33 24.9	3.568
19	2 53 37.64	2.2376	13 00 11.7	7.648	19	4 47 26.99	2.4980	17 36 55.6	3.455
20	2 55 52.06	2.2432	13 07 48.7	7.587	20	4 49 57.01	2.5027	17 40 19.5	3.341
21	2 58 06.83	2.2488	13 15 22.1	7.525	21	4 52 27.31	2.5072	17 43 36.5	3.226
22	3 00 21.92	2.2543	13 22 51.7	7.462	22	4 54 57.87	2.5116	17 46 46.6	3.111
23	3 02 37.35	+ 2.2599	N. 13 30 17.5	+ 7.398	23	4 57 28.70	+ 2.5160	N. 17 49 49.8	+ 2.995
WEDNESDAY 30.					FRIDAY, JANUARY 1, 1904.				
0	3 04 53.11	+ 2.2655	N. 13 37 39.4	+ 7.332	0	4 59 59.79	+ 2.5203	N. 17 52 46.0	+ 2.878
1	3 07 09.21	2.2712	13 44 57.3	7.265	PHASES OF THE MOON.				
2	3 09 25.65	2.2768	13 52 11.2	7.198					
3	3 11 42.43	2.2825	13 59 21.0	7.128					
4	3 13 59.55	2.2881	14 06 26.6	7.058					
5	3 16 17.00	2.2938	14 13 28.0	6.987	<div><div>○ Full Moon Dec.</div><div>d h m</div><div>4 06 12.7</div></div>				
6	3 18 34.80	2.2995	14 20 25.1	6.916					
7	3 20 52.94	2.3052	14 27 17.9	6.843					
8	3 23 11.42	2.3108	14 34 06.2	6.768					
9	3 25 30.24	2.3165	14 40 50.0	6.692	<div><div>☾ Last Quarter</div><div>10 22 53.0</div></div>				
10	3 27 49.40	2.3222	14 47 29.2	6.615					
11	3 30 08.90	2.3278	14 54 03.8	6.538					
12	3 32 28.73	2.3334	15 00 33.7	6.458					
13	3 34 48.91	2.3392	15 06 58.8	6.378	<div><div>● New Moon</div><div>18 09 25.9</div></div>				
14	3 37 09.43	2.3448	15 13 19.1	6.297					
15	3 39 30.29	2.3505	15 19 34.4	6.214					
16	3 41 51.49	2.3561	15 25 44.8	6.131					
17	3 44 13.02	2.3617	15 31 50.1	6.046	<div><div>☾ Perigee Dec.</div><div>d h</div><div>6 20.9</div></div>				
18	3 46 34.89	2.3673	15 37 50.3	5.960					
19	3 48 57.10	2.3730	15 43 45.3	5.873					
20	3 51 19.65	2.3786	15 49 35.0	5.785					
21	3 53 42.53	2.3841	15 55 19.5	5.696	<div><div>☾ Apogee</div><div>22 22.3</div></div>				
22	3 56 05.74	2.3897	16 00 58.5	5.605					
23	3 58 29.29	2.3953	16 06 32.1	5.514					
24	4 00 53.17	+ 2.4008	N. 16 12 00.2	+ 5.422					

GREENWICH MEAN TIME.										
LUNAR DISTANCES.										
Day of the Month.	Name and Direction of Object.		Noon.	P. L. of Diff.	IIIh	P. L. of Diff.	VIh	P. L. of Diff.	IXh	P. L. of Diff.
			° ' "		° ' "		° ' "		° ' "	
1	MARS	W.	95 00 43	2902	96 32 59	2884	98 05 38	2867	99 38 39	2850
	α Aquilæ	W.	87 35 20	3030	89 04 56	3013	90 34 53	2997	92 05 10	2981
	SATURN	W.	81 32 05	2657	83 09 43	2640	84 47 44	2623	86 26 08	2607
	Fomalhaut	W.	56 01 50	3187	57 28 16	3150	58 55 26	3114	60 23 19	3081
	JUPITER	W.	42 21 23	2650	43 59 10	2632	45 37 21	2615	47 15 55	2598
	α Pegasi	W.	39 57 37	3178	41 24 12	3129	42 51 47	3080	44 20 21	3034
	Pollux	E.	85 33 32	2701	83 56 54	2685	82 19 54	2669	80 42 33	2654
2	MARS	W.	107 29 19	2765	109 04 33	2748	110 40 09	2732	112 16 06	2716
	α Aquilæ	W.	99 41 14	2914	101 13 15	2903	102 45 30	2893	104 17 58	2885
	SATURN	W.	94 43 45	2525	96 24 24	2508	98 05 26	2493	99 46 49	2477
	Fomalhaut	W.	67 52 37	2931	69 24 17	2905	70 56 29	2880	72 29 14	2865
	JUPITER	W.	55 34 37	2514	57 15 31	2498	58 56 47	2482	60 38 26	2466
	α Pegasi	W.	51 56 17	2845	53 29 46	2815	55 03 55	2784	56 38 44	2754
	Pollux	E.	72 30 35	2579	70 51 11	2565	69 11 28	2551	67 31 26	2538
	Regulus	E.	108 36 13	2489	106 54 45	2474	105 12 55	2457	103 30 41	2441
3	SATURN	W.	108 19 05	2404	110 02 34	2391	111 46 21	2378	113 30 28	2365
	Fomalhaut	W.	80 20 11	2753	81 55 40	2736	83 31 32	2720	85 07 45	2704
	JUPITER	W.	69 12 10	2391	70 55 58	2376	72 40 07	2363	74 24 35	2350
	α Pegasi	W.	64 41 41	2632	66 19 52	2612	67 58 31	2591	69 37 38	2572
	Pollux	E.	59 06 59	2482	57 25 20	2472	55 43 28	2465	54 01 26	2458
	Regulus	E.	94 54 06	2367	93 09 44	2353	91 25 01	2339	89 39 59	2326
4	Fomalhaut	W.	93 13 31	2644	94 51 26	2636	96 29 32	2629	98 07 48	2621
	JUPITER	W.	83 11 32	2289	84 57 47	2279	86 44 17	2269	88 31 02	2259
	α Pegasi	W.	77 59 17	2492	79 40 41	2479	81 22 24	2467	83 04 24	2455
	α Arietis	W.	34 27 47	2592	36 06 53	2554	37 46 51	2520	39 27 36	2490
	Pollux	E.	45 29 11	2440	43 46 33	2443	42 03 59	2446	40 21 30	2451
	Regulus	E.	80 50 12	2266	79 03 23	2256	77 16 19	2246	75 29 00	2236
5	Fomalhaut	W.	106 20 45	2611	107 59 25	2612	109 38 03	2617	111 16 35	2623
	JUPITER	W.	97 28 09	2218	99 16 09	2212	101 04 18	2206	102 52 36	2201
	α Pegasi	W.	91 38 01	2412	93 21 18	2407	95 04 43	2403	96 48 14	2398
	α Arietis	W.	48 00 41	2378	49 44 47	2361	51 29 18	2346	53 14 11	2333
	Aldebaran	W.	13 38 57	2195	15 27 32	2188	17 16 17	2181	19 05 13	2174
	Regulus	E.	66 29 06	2196	64 40 33	2190	62 51 51	2184	61 03 00	2179
	Spica	E.	120 00 08	2198	118 11 38	2192	116 22 58	2185	114 34 08	2180
	VENUS	E.	123 31 23	2517	121 50 33	2510	120 09 33	2503	118 28 24	2497
6	JUPITER	W.	111 55 48	2183	113 44 41	2181	115 33 37	2180	117 22 35	2179
	α Pegasi	W.	105 26 42	2396	107 10 23	2399	108 53 59	2403	110 37 30	2408
	α Arietis	W.	62 02 46	2285	63 49 07	2279	65 35 38	2273	67 22 17	2269
	Aldebaran	W.	28 11 58	2153	30 01 37	2150	31 51 20	2148	33 41 06	2147
	Regulus	E.	51 57 08	2163	50 07 45	2161	48 18 19	2161	46 28 52	2160
	Spica	E.	105 28 08	2159	103 38 39	2157	101 49 07	2155	99 59 32	2154
	VENUS	E.	110 00 57	2478	108 19 13	2476	106 37 26	2474	104 55 36	2473
7	α Arietis	W.	76 16 43	2260	78 03 42	2260	79 50 40	2261	81 37 37	2262
	Aldebaran	W.	42 50 07	2149	44 39 52	2150	46 29 35	2153	48 19 14	2155
	Regulus	E.	37 21 50	2169	35 32 36	2173	33 43 28	2177	31 54 26	2183
	Spica	E.	90 51 27	2157	89 01 54	2158	87 12 23	2160	85 22 56	2165

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.	Midnight.	P. L. of Diff.	XV ^h	P. L. of Diff.	XVIII ^h	P. L. of Diff.	XXI ^h	P. L. of Diff.
		° ' "		° ' "		° ' "		° ' "	
1	MARS W.	101 12 02	2832	102 45 48	2815	104 19 56	2798	105 54 27	2782
	α Aquilæ W.	93 35 47	2965	95 06 43	2951	96 37 57	2938	98 09 28	2926
	SATURN W.	88 04 54	2590	89 44 03	2574	91 23 34	2557	93 03 28	2540
	Fomalhaut W.	61 51 54	3048	63 21 09	3017	64 51 02	2987	66 21 32	2958
	JUPITER W.	48 54 53	2581	50 34 14	2564	52 13 58	2547	53 54 06	2530
	α Pegasi W.	45 49 52	2991	47 20 16	2951	48 51 30	2914	50 23 31	2879
	Pollux E.	79 04 51	2638	77 26 48	2623	75 48 24	2608	74 09 40	2593
2	MARS W.	113 52 25	2701	115 29 04	2685	117 06 04	2670	118 43 24	2656
	α Aquilæ W.	105 50 36	2877	107 23 24	2871	108 56 20	2866	110 29 23	2862
	SATURN W.	101 28 34	2462	103 10 41	2448	104 53 08	2433	106 35 56	2418
	Fomalhaut W.	74 02 22	2833	75 36 15	2812	77 10 27	2792	78 45 06	2772
	JUPITER W.	62 20 28	2450	64 02 52	2436	65 45 36	2420	67 28 42	2405
	α Pegasi W.	58 14 12	2788	59 50 15	2703	61 26 51	2678	63 04 00	2655
	Pollux E.	65 51 06	2525	64 10 28	2514	62 29 34	2502	60 48 24	2492
	Regulus E.	101 48 05	2426	100 05 07	2411	98 21 48	2396	96 38 07	2382
3	SATURN W.	115 14 53	2353	116 59 36	2341	118 44 36	2330	120 29 52	2318
	Fomalhaut W.	86 44 19	2690	88 21 12	2677	89 58 23	2665	91 35 50	2653
	JUPITER W.	76 09 22	2337	77 54 28	2324	79 39 52	2312	81 25 34	2301
	α Pegasi W.	71 17 11	2555	72 57 08	2538	74 37 29	2521	76 18 13	2507
	Pollux E.	52 19 13	2450	50 36 50	2446	48 54 21	2443	47 11 47	2441
	Regulus E.	87 54 38	2313	86 08 58	2301	84 23 00	2289	82 36 44	2278
4	Fomalhaut W.	99 46 14	2616	101 24 47	2613	103 03 24	2611	104 42 04	2610
	JUPITER W.	90 18 02	2250	92 05 15	2241	93 52 41	2233	95 40 19	2225
	α Pegasi W.	84 46 41	2444	86 29 13	2436	88 11 57	2427	89 54 53	2419
	α Arietis W.	41 09 03	2462	42 51 09	2438	44 33 49	2416	46 17 01	2396
	Pollux E.	38 39 08	2460	36 56 59	2475	35 15 10	2490	33 33 43	2510
	Regulus E.	73 41 26	2227	71 53 39	2219	70 05 40	2211	68 17 29	2203
5	Fomalhaut W.	112 54 59	2629	114 33 14	2639	116 11 16	2651	117 49 02	2664
	JUPITER W.	104 41 02	2196	106 29 35	2192	108 18 14	2188	110 06 59	2186
	α Pegasi W.	98 31 51	2396	100 15 32	2394	101 59 15	2394	103 42 59	2394
	α Arietis W.	54 59 23	2321	56 44 52	2311	58 30 36	2300	60 16 35	2292
	Aldebaran W.	20 54 19	2169	22 43 34	2164	24 32 56	2160	26 22 24	2156
	Regulus E.	59 14 01	2175	57 24 56	2171	55 35 45	2168	53 46 29	2165
	Spica E.	112 45 10	2174	110 56 04	2170	109 06 51	2166	107 17 32	2163
	VENUS E.	116 47 07	2492	115 05 43	2488	113 24 13	2484	111 42 37	2481
6	JUPITER W.	119 11 34	2178	121 00 34	2179	122 49 33	2180	124 38 30	2182
	α Pegasi W.	112 20 54	2415	114 04 08	2422	115 47 11	2431	117 30 02	2441
	α Arietis W.	69 09 02	2266	70 55 52	2263	72 42 46	2260	74 29 44	2260
	Aldebaran W.	35 30 54	2147	37 20 42	2146	39 10 31	2146	41 00 20	2147
	Regulus E.	44 39 24	2161	42 49 57	2162	41 00 32	2163	39 11 09	2166
	Spica E.	98 09 55	2154	96 20 18	2153	94 30 40	2154	92 41 03	2155
	VENUS E.	103 13 45	2472	101 31 53	2474	99 50 03	2474	98 08 13	2475
7	α Arietis W.	83 24 32	2266	85 11 22	2268	86 58 08	2272	88 44 48	2277
	Aldebaran W.	50 08 49	2159	51 58 18	2163	53 47 42	2167	55 37 00	2170
	Regulus E.	30 05 33	2190	28 16 51	2198	26 28 20	2206	24 40 02	2216
	Spica E.	83 33 33	2167	81 44 16	2170	79 55 04	2174	78 05 58	2179

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.	Noon.	P. L. of Diff.	IIIh	P. L. of Diff.	VIh	P. L. of Diff.	IXh	P. L. of Diff.
		° ' "		° ' "		° ' "		° ' "	
7	VENUS E.	96 26 24	2477	94 44 38	2479	93 02 55	2482	91 21 16	2485
8	α Arietis W.	90 31 22	2282	92 17 48	2287	94 04 07	2293	95 50 17	2300
	Aldebaran W.	57 26 12	2176	59 15 16	2181	61 04 12	2186	62 53 00	2192
	Spica E.	76 16 59	2184	74 28 08	2190	72 39 25	2196	70 50 51	2202
	VENUS E.	82 54 21	2508	81 13 19	2515	79 32 26	2520	77 51 41	2526
	SUN E.	128 59 41	2515	127 18 48	2519	125 38 01	2524	123 57 21	2530
9	α Arietis W.	104 38 24	2342	106 23 23	2350	108 08 09	2361	109 52 40	2371
	Aldebaran W.	71 54 39	2227	73 42 27	2234	75 30 04	2241	77 17 30	2249
	Pollux W.	30 23 18	2569	32 02 55	2547	33 43 03	2547	35 23 38	2511
	Spica E.	61 50 27	2237	60 02 55	2245	58 15 35	2253	56 28 27	2262
	VENUS E.	69 30 19	2564	67 50 35	2573	66 11 03	2581	64 31 42	2590
	SUN E.	115 36 10	2564	113 56 25	2571	112 16 50	2579	110 37 26	2588
10	Aldebaran W.	86 11 36	2292	87 57 47	2301	89 43 45	2310	91 29 30	2319
	Pollux W.	43 50 49	2473	45 32 40	2471	47 14 34	2470	48 56 29	2471
	Spica E.	47 36 04	2309	45 50 17	2318	44 04 44	2328	42 19 26	2339
	VENUS E.	56 18 05	2637	54 40 00	2647	53 02 09	2657	51 24 31	2666
	SUN E.	102 23 25	2632	100 45 14	2641	99 07 15	2651	97 29 29	2661
11	Aldebaran W.	100 14 54	2366	101 59 18	2375	103 43 29	2384	105 27 26	2394
	Pollux W.	57 25 23	2487	59 06 55	2493	60 48 18	2498	62 29 34	2505
	Regulus W.	20 27 20	2420	22 10 26	2424	23 53 26	2428	25 36 21	2433
	Spica E.	33 36 51	2396	31 53 10	2408	30 09 47	2421	28 26 42	2435
	VENUS E.	43 19 45	2719	41 43 30	2729	40 07 28	2738	38 31 40	2749
	SUN E.	89 24 02	2711	87 47 37	2722	86 11 26	2732	84 35 28	2741
12	Pollux W.	70 53 45	2538	72 34 06	2545	74 14 16	2553	75 54 16	2561
	Regulus W.	34 09 06	2463	35 51 11	2471	37 33 05	2479	39 14 48	2486
	VENUS E.	30 36 04	2801	29 01 38	2811	27 27 25	2822	25 53 26	2832
	SUN E.	76 39 03	2794	75 04 27	2805	73 30 05	2815	71 55 56	2825
13	Pollux W.	84 11 29	2602	85 50 21	2611	87 29 01	2620	89 07 29	2628
	Regulus W.	47 40 37	2528	49 21 11	2536	51 01 34	2543	52 41 47	2552
	VENUS E.	18 06 48	2883	16 34 07	2891	15 01 40	2903	13 29 25	2912
	SUN E.	64 08 33	2877	62 35 45	2887	61 03 10	2898	59 30 48	2908
14	Pollux W.	97 16 49	2675	98 54 03	2684	100 31 05	2693	102 07 54	2702
	Regulus W.	60 59 54	2594	62 38 57	2603	64 17 48	2611	65 56 28	2620
	SUN E.	51 52 17	2961	50 21 15	2971	48 50 26	2982	47 19 51	2993
15	Regulus W.	74 06 56	2661	75 44 28	2670	77 21 48	2678	78 58 57	2687
	SUN E.	39 50 20	3049	38 21 08	3061	36 52 11	3074	35 23 30	3087
20	SUN W.	18 43 29	3511	20 03 41	3503	21 24 02	3496	22 44 31	3489
	JUPITER E.	60 50 20	3028	59 20 42	3036	57 51 14	3043	56 21 55	3050
	α Arietis E.	109 28 58	3096	108 00 44	3102	106 32 37	3108	105 04 37	3113
21	SUN W.	29 28 02	3481	30 48 47	3483	32 09 30	3484	33 30 12	3486
	JUPITER E.	48 57 23	3082	47 28 52	3089	46 00 29	3095	44 32 13	3100
	α Arietis E.	97 46 05	3138	96 18 41	3142	94 51 22	3147	93 24 09	3151

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.	Midnight.	P. L. of Diff.	XVh	P. L. of Diff.	XVIIIh	P. L. of Diff.	XXIh	P. L. of Diff.
		° ' "		° ' "		° ' "		° ' "	
7	VENUS E.	89 39 41	2489	87 58 12	2492	86 16 48	2497	84 35 31	2502
8	α Arietis W.	97 36 17	2307	99 22 07	2315	101 07 45	2323	102 53 11	2332
	Aldebaran W.	64 41 40	2199	66 30 09	2205	68 18 29	2212	70 06 39	2218
	Spica E.	69 02 26	2208	67 14 11	2215	65 26 06	2222	63 38 11	2229
	VENUS E.	76 11 04	2533	74 30 37	2541	72 50 21	2548	71 10 15	2556
	SUN E.	122 16 49	2536	120 36 26	2542	118 56 11	2549	117 16 06	2556
9	α Arietis W.	111 36 56	2383	113 20 55	2395	115 04 37	2407	116 48 02	2419
	Aldebaran W.	79 04 44	2258	80 51 46	2266	82 38 35	2274	84 25 12	2283
	Pollux W.	37 04 36	2497	38 45 53	2488	40 27 23	2481	42 09 03	2477
	Spica E.	54 41 32	2271	52 54 50	2280	51 08 21	2289	49 22 06	2298
	VENUS E.	62 52 33	2599	61 13 37	2609	59 34 54	2618	57 56 23	2627
	SUN E.	108 58 14	2596	107 19 13	2605	105 40 25	2614	104 01 49	2623
10	Aldebaran W.	93 15 02	2328	95 00 20	2337	96 45 25	2347	98 30 16	2356
	Pollux W.	50 38 23	2473	52 20 14	2476	54 02 01	2479	55 43 44	2482
	Spica E.	40 34 23	2349	38 49 35	2361	37 05 04	2372	35 20 49	2384
	VENUS E.	49 47 06	2677	48 09 55	2687	46 32 58	2698	44 56 15	2707
	SUN E.	95 51 57	2671	94 14 38	2681	92 37 33	2691	91 00 41	2701
11	Aldebaran W.	107 11 10	2403	108 54 40	2413	110 37 56	2422	112 21 00	2431
	Pollux W.	64 10 43	2510	65 51 43	2517	67 32 33	2523	69 13 14	2530
	Regulus W.	27 19 09	2436	29 01 50	2443	30 44 24	2448	32 26 50	2455
	Spica E.	26 43 57	2450	25 01 33	2467	23 19 33	2483	21 37 56	2502
	VENUS E.	36 56 05	2760	35 20 45	2770	33 45 38	2780	32 10 44	2791
	SUN E.	82 59 43	2753	81 24 13	2763	79 48 56	2773	78 13 53	2783
12	Pollux W.	77 34 05	2569	79 13 43	2577	80 53 09	2585	82 32 25	2593
	Regulus W.	40 56 21	2494	42 37 42	2502	44 18 52	2511	45 59 50	2519
	VENUS E.	24 19 40	2842	22 46 07	2853	21 12 48	2862	19 39 41	2873
	SUN E.	70 22 00	2835	68 48 18	2846	67 14 50	2856	65 41 35	2866
13	Pollux W.	90 45 46	2638	92 23 50	2646	94 01 42	2655	95 39 22	2666
	Regulus W.	54 21 48	2561	56 01 37	2569	57 41 14	2577	59 20 40	2586
	VENUS E.	11 57 22	2923	10 25 32	2933	8 53 55	2942	7 22 30	2952
	SUN E.	57 58 39	2919	56 26 44	2929	54 55 02	2939	53 23 33	2950
14	Pollux W.	103 44 31	2712	105 20 55	2722	106 57 06	2732	108 33 04	2741
	Regulus W.	67 34 56	2628	69 13 13	2637	70 51 18	2644	72 29 13	2653
	SUN E.	45 49 29	3004	44 19 21	3014	42 49 26	3026	41 19 46	3038
15	Regulus W.	80 35 55	2695	82 12 41	2703	83 49 17	2711	85 25 42	2719
	SUN E.	33 55 04	3100	32 26 54	3114	30 59 01	3128	29 31 25	3143
20	SUN W.	24 05 07	3485	25 25 48	3482	26 46 32	3481	28 07 17	3481
	JUPITER E.	54 52 44	3056	53 23 41	3065	51 54 48	3070	50 26 02	3076
	α Arietis E.	103 36 43	3117	102 08 54	3122	100 41 11	3128	99 13 35	3133
21	SUN W.	34 50 52	3488	36 11 30	3489	37 32 06	3491	38 52 40	3492
	JUPITER E.	43 04 03	3105	41 36 00	3110	40 08 03	3115	38 40 12	3120
	α Arietis E.	91 57 02	3156	90 30 00	3161	89 03 04	3165	87 36 13	3169

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.	Noon.	P. L. of Diff.	III ^h	P. L. of Diff.	VI ^h	P. L. of Diff.	IX ^h	P. L. of Diff.
22	SUN W.	40 13 13	3495	41 33 43	3497	42 54 11	3498	44 14 37	3499
	JUPITER E.	37 12 27	3125	35 44 48	3129	34 17 14	3133	32 49 45	3138
	α Arietis E.	86 09 26	3173	84 42 45	3177	83 16 08	3181	81 49 36	3184
	Aldebaran E.	119 08 05	3065	117 39 12	3068	116 10 23	3071	114 41 38	3073
23	SUN W.	50 56 32	3503	52 16 53	3502	53 37 15	3501	54 57 38	3500
	JUPITER E.	25 33 29	3156	24 06 27	3160	22 39 30	3163	21 12 37	3167
	α Arietis E.	74 37 56	3199	73 11 46	3202	71 45 39	3204	70 19 35	3206
	Aldebaran E.	107 18 34	3082	105 50 02	3083	104 21 32	3082	102 53 01	3082
24	SUN W.	61 39 56	3489	63 00 32	3486	64 21 11	3482	65 41 55	3478
	SATURN W.	26 08 01	3190	27 34 22	3181	29 00 54	3172	30 27 37	3163
	α Arietis E.	63 09 48	3215	61 43 57	3216	60 18 07	3217	58 52 18	3219
	Aldebaran E.	95 30 15	3076	94 01 36	3073	92 32 54	3070	91 04 08	3066
25	SUN W.	72 26 54	3450	73 48 14	3442	75 09 43	3435	76 31 20	3427
	SATURN W.	37 43 48	3120	39 11 33	3111	40 39 28	3102	42 07 35	3093
	α Arietis E.	51 43 37	3225	50 17 57	3227	48 52 20	3229	47 26 45	3232
	Aldebaran E.	83 39 00	3042	82 09 39	3036	80 40 11	3029	79 10 34	3022
26	SUN W.	83 21 52	3379	84 44 32	3368	86 07 25	3357	87 30 31	3345
	SATURN W.	49 31 04	3043	51 00 24	3031	52 29 58	3020	53 59 46	3008
	α Arietis E.	40 19 56	3258	38 54 55	3266	37 30 04	3276	36 05 25	3289
	Aldebaran E.	71 40 04	2979	70 09 25	2969	68 38 33	2958	67 07 28	2947
	Pollux E.	114 44 32	3082	113 16 01	3070	111 47 15	3057	110 18 13	3045
27	SUN W.	94 29 38	3278	95 54 15	3264	97 19 09	3248	98 44 21	3233
	SATURN W.	61 32 38	2943	63 04 02	2929	64 35 44	2914	66 07 45	2899
	Aldebaran E.	59 28 24	2887	57 55 48	2873	56 22 54	2859	54 49 42	2845
	Pollux E.	102 49 01	2977	101 18 19	2962	99 47 19	2947	98 16 00	2932
28	SUN W.	105 55 05	3150	107 22 14	3133	108 49 44	3114	110 17 36	3096
	SATURN W.	73 52 42	2820	75 26 44	2804	77 01 07	2786	78 35 53	2769
	α Pegasi E.	35 44 06	3197	37 04 34	3189	38 26 18	3165	39 49 14	3137
	Aldebaran E.	46 58 57	2768	45 23 47	2752	43 48 16	2735	42 12 22	2718
	Pollux E.	90 34 33	2853	89 01 14	2838	87 27 35	2821	85 53 34	2804
29	SUN W.	117 42 33	3003	119 12 42	2983	120 43 16	2964	122 14 14	2945
	SATURN W.	86 35 28	2679	88 12 36	2661	89 50 08	2643	91 28 05	2624
	α Pegasi W.	46 59 26	3069	48 28 13	3049	49 57 50	2990	51 28 15	2954
	Aldebaran E.	34 07 08	2629	32 28 53	2612	30 50 14	2593	29 11 10	2575
	Pollux E.	77 58 00	2719	76 21 46	2702	74 45 09	2685	73 08 09	2669
	Regulus E.	114 08 25	2637	112 30 20	2618	110 51 50	2599	109 12 53	2580
30	SATURN W.	99 44 16	2530	101 24 48	2510	103 05 47	2492	104 47 11	2473
	α Pegasi W.	59 11 15	2792	60 45 53	2763	62 21 09	2735	63 57 02	2708
	Pollux E.	64 57 33	2586	63 18 19	2571	61 38 44	2556	59 58 48	2541
	Regulus E.	100 51 44	2486	99 10 11	2467	97 28 12	2448	95 45 46	2429
31	α Pegasi W.	72 05 09	2585	73 44 24	2563	75 24 10	2542	77 04 25	2522
	Pollux E.	51 34 19	2477	49 52 34	2468	48 10 36	2459	46 28 25	2451
	Regulus E.	87 07 00	2338	85 21 56	2321	83 36 27	2303	81 50 32	2287

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.	Midnight.	P. L. of Diff.	XV ^h	P. L. of Diff.	XVIII ^h	P. L. of Diff.	XXI ^h	P. L. of Diff.
		° ' "		° ' "		° ' "		° ' "	
22	SUN W.	45 35 02	3501	46 55 25	3502	48 15 47	3501	49 36 10	3500
	JUPITER E.	31 22 21	3141	29 55 01	3145	28 27 46	3149	27 00 35	3153
	α Arietis E.	80 23 08	3188	78 56 45	3191	77 30 25	3194	76 04 09	3197
	Aldebaran E.	113 12 56	3076	111 44 17	3078	110 15 41	3080	108 47 07	3081
23	SUN W.	56 18 02	3499	57 38 27	3497	58 58 54	3495	60 19 24	3492
	JUPITER E.	19 45 48	3173	18 19 06	3179	16 52 32	3186	15 26 06	3195
	α Arietis E.	68 53 33	3209	67 27 34	3210	66 01 37	3212	64 35 42	3213
	Aldebaran E.	101 24 30	3082	99 55 59	3081	98 27 26	3080	96 58 52	3078
24	SUN W.	67 02 43	3474	68 23 36	3469	69 44 35	3463	71 05 41	3456
	SATURN W.	31 54 31	3155	33 21 34	3146	34 48 48	3137	36 16 13	3129
	α Arietis E.	57 26 31	3220	56 00 45	3221	54 35 01	3222	53 09 18	3224
	Aldebaran E.	89 35 17	3062	88 06 22	3058	86 37 21	3053	85 08 14	3047
25	SUN W.	77 53 06	3419	79 15 01	3409	80 37 07	3400	81 59 24	3390
	SATURN W.	43 35 53	3084	45 04 22	3074	46 33 03	3064	48 01 57	3053
	α Arietis E.	46 01 14	3235	44 35 46	3239	43 10 23	3244	41 45 06	3250
	Aldebaran E.	77 40 48	3014	76 10 53	3006	74 40 48	2997	73 10 32	2988
26	SUN W.	88 53 51	3332	90 17 25	3320	91 41 13	3306	93 05 17	3292
	SATURN W.	55 29 49	2996	57 00 07	2983	58 30 41	2970	60 01 31	2957
	α Arietis E.	34 41 01	3306	33 16 56	3327	31 53 16	3351	30 30 03	3377
	Aldebaran E.	65 36 09	2936	64 04 36	2924	62 32 48	2912	61 00 44	2899
	Pollux E.	108 48 56	3032	107 19 23	3018	105 49 33	3005	104 19 26	2990
27	SUN W.	100 09 51	3217	101 35 40	3201	103 01 48	3184	104 28 16	3167
	SATURN W.	67 40 05	2885	69 12 43	2869	70 45 42	2853	72 19 02	2837
	Aldebaran E.	53 16 12	2830	51 42 23	2815	50 08 15	2799	48 33 46	2784
	Pollux E.	96 44 22	2916	95 12 24	2902	93 40 08	2886	92 07 31	2869
28	SUN W.	111 45 50	3078	113 14 26	3060	114 43 25	3041	116 12 47	3022
	SATURN W.	80 11 01	2752	81 46 32	2734	83 22 27	2716	84 58 45	2698
	α Pegasi W.	41 13 17	3253	42 38 23	3204	44 04 28	3156	45 31 30	3111
	Aldebaran E.	40 36 06	2701	38 59 27	2684	37 22 25	2666	35 44 59	2647
	Pollux E.	84 19 11	2788	82 44 27	2770	81 09 20	2753	79 33 51	2737
29	SUN W.	123 45 36	2926	125 17 22	2907	126 49 32	2887	128 22 08	2866
	SATURN W.	93 06 28	2605	94 45 16	2586	96 24 30	2567	98 04 10	2548
	α Pegasi W.	52 59 25	2920	54 31 19	2886	56 03 56	2853	57 37 15	2821
	Aldebaran E.	27 31 41	2556	25 51 46	2538	24 11 26	2520	22 30 41	2501
	Pollux E.	71 30 47	2652	69 53 02	2635	68 14 54	2619	66 36 25	2602
	Regulus E.	107 33 31	2561	105 53 43	2543	104 13 30	2524	102 32 50	2505
30	SATURN W.	106 29 02	2455	108 11 18	2437	109 54 00	2419	111 37 07	2401
	α Pegasi W.	65 33 32	2682	67 10 36	2657	68 48 14	2632	70 26 25	2608
	Pollux E.	58 18 32	2527	56 37 56	2513	54 57 01	2500	53 15 48	2489
	Regulus E.	94 02 53	2411	92 19 34	2393	90 35 49	2375	88 51 38	2356
31	α Pegasi W.	78 45 08	2502	80 26 19	2483	82 07 56	2465	83 49 58	2448
	Pollux E.	44 46 03	2446	43 03 34	2443	41 21 00	2441	39 38 24	2440
	Regulus E.	80 04 13	2270	78 17 30	2253	76 30 22	2237	74 42 50	2222

GREENWICH MEAN TIME.

JANUARY.						FEBRUARY.										
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.					
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.						
	h m s	s	° ' "	"	h m		h m s	s	° ' "	"	h m					
1	19 34 21.06	+ 17.409	23 51 35.2	+ 40.67	0 54.6	1	21 00 59.15	- 12.101	13 25 51.6	- 29.43	0 18.5					
2	19 41 17.54	17.294	23 34 32.5	44.55	0 57.6	2	20 56 04.79	12.370	13 38 55.1	35.63	0 10.0					
3	19 48 11.00	17.157	23 15 57.3	48.38	1 00.6	3	20 51 08.12	12.296	13 54 11.1	40.47	0 01.2					
4	19 55 00.84	16.993	22 55 50.7	52.15	1 03.5	4	20 46 17.15	11.899	14 11 07.2	43.97	23 43.9					
5	20 01 46.32	16.795	22 34 14.4	55.85	1 06.3	5	20 41 39.26	11.214	14 29 11.4	46.17	23 35.7					
6	20 08 26.71	+ 16.565	22 11 10.7	+ 59.44	1 09.0	6	20 37 20.82	- 10.289	14 47 53.9	- 47.18	23 27.9					
7	20 15 01.10	16.295	21 46 42.8	62.87	1 11.6	7	20 33 27.00	9.170	15 06 48.0	47.16	23 20.5					
8	20 21 28.49	15.980	21 20 54.3	66.14	1 14.1	8	20 30 01.75	7.917	15 25 30.9	46.28	23 13.7					
9	20 27 47.74	15.615	20 53 50.0	69.18	1 16.5	9	20 27 07.70	6.576	15 43 43.7	44.69	23 07.4					
10	20 33 57.59	15.195	20 25 35.7	71.96	1 18.7	10	20 24 46.47	5.191	16 01 11.5	42.54	23 01.7					
11	20 39 56.57	+ 14.709	19 56 18.6	+ 74.41	1 20.8	11	20 22 58.61	- 3.799	16 17 42.2	- 39.95	22 56.5					
12	20 45 43.07	14.153	19 26 06.9	76.49	1 22.6	12	20 21 43.94	2.429	16 33 06.7	37.05	22 51.8					
13	20 51 15.26	13.516	18 55 10.8	78.10	1 24.2	13	20 21 01.67	- 1.103	16 47 18.6	33.92	22 47.7					
14	20 56 31.10	12.788	18 23 42.1	79.19	1 25.5	14	20 20 50.55	+ 0.165	17 00 13.0	30.59	22 44.1					
15	21 01 28.31	11.963	17 51 54.6	79.66	1 26.5	15	20 21 09.05	1.365	17 11 45.9	27.15	22 40.9					
16	21 06 04.45	+ 11.030	17 20 04.0	+ 79.43	1 27.1	16	20 21 55.47	+ 2.490	17 21 55.4	- 23.63	22 38.1					
17	21 10 16.82	9.981	16 48 28.2	78.42	1 27.3	17	20 23 07.97	3.540	17 30 39.7	20.06	22 35.8					
18	21 14 02.56	8.810	16 17 27.2	76.52	1 27.1	18	20 24 44.77	4.514	17 37 57.8	16.44	22 33.8					
19	21 17 18.68	7.511	15 47 22.9	73.67	1 26.5	19	20 26 44.05	5.414	17 43 48.9	12.83	22 32.2					
20	21 20 02.10	6.086	15 18 39.1	69.80	1 25.2	20	20 29 04.05	6.242	17 48 13.4	9.21	22 30.9					
21	21 22 09.83	+ 4.539	14 51 40.7	+ 64.88	1 23.3	21	20 31 43.13	+ 7.004	17 51 11.0	- 5.59	22 29.9					
22	21 23 39.02	2.876	14 26 53.3	58.89	1 20.9	22	20 34 39.75	7.704	17 52 41.6	- 1.97	22 29.1					
23	21 24 27.14	+ 1.119	14 04 42.4	51.85	1 17.7	23	20 37 52.46	8.344	17 52 45.6	+ 1.63	22 28.6					
24	21 24 32.22	- 0.705	13 45 32.1	43.86	1 13.8	24	20 41 19.90	8.933	17 51 23.5	5.22	22 28.3					
25	21 23 53.04	2.562	13 29 44.0	35.02	1 09.2	25	20 45 00.84	9.471	17 48 35.4	8.79	22 28.3					
26	21 22 29.32	- 4.408	13 17 36.2	+ 25.53	1 03.9	26	20 48 54.16	+ 9.965	17 44 21.9	+ 12.33	22 28.4					
27	21 20 21.97	6.188	13 09 21.6	15.65	0 57.8	27	20 52 58.81	10.416	17 38 43.6	15.88	22 28.7					
28	21 17 33.27	7.844	13 05 06.5	+ 5.62	0 51.1	28	20 57 13.84	10.830	17 31 40.7	19.37	22 29.2					
29	21 14 06.90	9.317	13 04 50.1	- 4.20	0 43.7	29	21 01 38.39	11.210	17 23 13.9	22.86	22 29.8					
30	21 10 07.96	10.548	13 08 23.9	13.51	0 35.8	30	21 06 11.67	11.559	17 13 23.7	26.32	22 30.5					
31	21 05 42.90	- 11.487	13 15 32.2	- 22.01	0 27.4	31	21 10 52.98	+ 11.879	17 02 10.5	+ 29.77	22 31.3					
32	21 00 59.15	- 12.101	13 25 51.6	- 29.43	0 18.8	32	21 15 41.67	+ 12.174	16 49 35.0	+ 33.19	22 32.3					
Day of the Month.	1st.	6th.	11th.	16th.	21st.	26th.	31st.	Day of the Month.				5th.	10th.	15th.	20th.	25th.
Semidiameter.	2.54	2.70	2.94	3.30	3.81	4.44	4.98	Semidiameter	. . .	5.11	4.83	4.39	3.99	3.64		
Hor. Parallax.	6.69	7.11	7.75	8.69	10.04	11.71	13.11	Hor. Parallax	. . .	13.46	12.74	11.61	10.51	9.59		

NOTE.—The sign + indicates north declinations; the sign — indicates south declinations.

GREENWICH MEAN TIME.

MARCH.						APRIL.							
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.		
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.			
	h m s	s	° ' "	"	h m		h m s	s	° ' "	"	h m		
1	21 01 38.39	+11.210	-17 23 13.9	+22.86	22 29.8	1	23 59 45.40	+16.693	-2 16 06.5	+119.19	23 27.8		
2	21 06 11.67	11.559	17 13 23.7	26.32	22 30.5	2	0 06 28.11	16.866	1 27 55.7	121.70	23 30.6		
3	21 10 52.98	11.879	17 02 10.5	29.77	22 31.3	3	0 13 15.05	17.046	-0 38 45.8	124.11	23 33.5		
4	21 15 41.67	12.174	16 49 35.0	33.19	22 32.3	4	0 20 06.39	17.233	+0 11 20.8	126.42	23 36.5		
5	21 20 37.16	12.446	16 35 37.5	36.59	22 33.4	5	0 27 02.28	17.427	1 02 21.4	128.62	23 39.6		
6	21 25 38.93	+12.697	-16 20 18.8	+39.97	22 34.6	6	0 34 02.86	+17.624	+1 54 12.9	+130.66	23 42.8		
7	21 30 46.50	12.930	16 03 39.2	43.32	22 35.9	7	0 41 08.26	17.827	2 46 51.6	132.54	23 46.0		
8	21 35 59.46	13.147	15 45 39.4	46.66	22 37.2	8	0 48 18.57	18.033	3 40 13.3	134.23	23 49.3		
9	21 41 17.43	13.348	15 26 19.8	49.97	22 38.6	9	0 55 33.87	18.242	4 34 13.1	135.70	23 52.7		
10	21 46 40.08	13.537	15 05 40.9	53.27	22 40.1	10	1 02 54.17	18.450	5 28 45.4	136.94	23 56.2		
11	21 52 07.12	+13.713	-14 43 43.2	+56.54	22 41.7	11	1 10 19.45	+18.636	+6 23 43.9	+137.88	23 59.8		
12	21 57 38.28	13.881	14 20 27.3	59.79	22 43.4	12	1 17 49.62	18.857	7 19 01.3	138.50			
13	22 03 13.34	14.039	13 55 53.7	63.02	22 45.1	13	1 25 24.51	19.049	8 14 29.3	138.77	0 03.4		
14	22 08 52.10	14.190	13 30 02.9	66.22	22 46.8	14	1 33 03.85	19.227	9 09 59.3	138.64	0 07.1		
15	22 14 34.40	14.334	13 02 55.4	69.41	22 48.6	15	1 40 47.28	19.388	10 05 20.8	138.07	0 10.9		
16	22 20 20.10	+14.473	-12 34 31.7	+72.57	22 50.5	16	1 48 34.31	+19.527	+11 00 23.2	+137.04	0 14.8		
17	22 26 09.08	14.608	12 04 52.4	75.70	22 52.4	17	1 56 24.36	19.639	11 54 54.9	135.51	0 18.7		
18	22 32 01.25	14.739	11 33 58.1	78.82	22 54.4	18	2 04 16.72	19.719	12 48 43.6	133.46	0 22.6		
19	22 37 56.54	14.868	11 01 49.3	81.92	22 56.5	19	2 12 10.55	19.761	13 41 36.9	130.88	0 26.6		
20	22 43 54.91	14.996	10 28 26.6	84.98	22 58.6	20	2 20 04.91	19.762	14 33 21.6	127.76	0 30.6		
21	22 49 56.33	+15.123	-9 53 50.6	+88.02	23 00.7	21	2 27 58.75	+19.717	+15 23 45.4	+124.13	0 34.6		
22	22 56 00.81	15.251	9 18 01.8	91.04	23 02.9	22	2 35 50.96	19.625	16 12 36.0	120.00	0 38.5		
23	23 02 08.37	15.379	8 41 01.0	94.02	23 05.1	23	2 43 40.37	19.483	16 59 41.8	115.41	0 42.4		
24	23 08 19.02	15.509	8 02 48.8	96.98	23 07.4	24	2 51 25.75	19.290	17 44 52.2	110.39	0 46.2		
25	23 14 32.82	15.641	7 23 26.0	99.91	23 09.7	25	2 59 05.88	19.046	18 27 57.9	105.03	0 49.9		
26	23 20 49.84	+15.777	-6 42 53.4	+102.80	23 12.1	26	3 06 39.55	+18.752	+19 08 51.1	+99.36	0 53.5		
27	23 27 10.17	15.917	6 01 11.7	105.66	23 14.6	27	3 14 05.57	18.409	19 47 25.1	93.43	0 57.0		
28	23 33 33.91	16.062	5 18 22.1	108.47	23 17.1	28	3 21 22.80	18.020	20 23 34.9	87.34	1 00.4		
29	23 40 01.17	16.211	4 34 25.4	111.24	23 19.7	29	3 28 30.18	17.588	20 57 17.1	81.14	1 03.6		
30	23 46 32.08	16.366	3 49 23.0	113.95	23 22.3	30	3 35 26.68	17.114	21 28 29.5	74.88	1 06.6		
31	23 53 06.77	+16.526	-3 03 16.2	+116.60	23 25.0	31	3 42 11.37	+16.603	+21 57 11.2	+68.60	1 09.4		
32	23 59 45.40	+16.693	-2 16 06.5	+119.19	23 27.8	32	3 48 43.35	+16.056	+22 23 22.3	+62.34	1 11.9		
Day of the Month.						Day of the Month.							
2d.		7th.	12th.	17th.	22d.	27th.	1st.		6th.	11th.	16th.	21st.	26th.
"		"	"	"	"	"	"		"	"	"	"	"
Semidiameter . . .		3.36	3.14	2.96	2.81	2.69	Semidiameter . . .		2.53	2.50	2.50	2.55	2.66
Hor. Parallax . . .		8.86	8.27	7.79	7.41	7.09	Hor. Parallax . . .		6.68	6.58	6.57	6.71	7.03

The sign + prefixed to the hourly change of declination indicates that north declinations are increasing or south declinations are decreasing. The sign - indicates that north declinations are decreasing or south declinations increasing.

GREENWICH MEAN TIME.

MAY.						JUNE.							
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.		
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.			
	h m s	s	° ' "	"	h m		h m s	s	° ' "	"	h m		
1	3 42 11.37	+16.603	+21 57 11.2	+68.60	1 09.4	1	4 47 29.80	-5.314	+20 28 48.6	-52.01	0 12.3		
2	3 48 43.35	16.056	22 23 22.3	62.34	1 11.9	2	4 45 20.18	5.471	20 08 06.9	51.36	0 06.2		
3	3 55 01.80	15.476	22 47 04.0	56.15	1 14.3	3	4 43 07.98	5.529	19 47 47.5	50.17	0 00.1		
4	4 01 05.98	14.867	23 08 18.1	50.05	1 16.4	4	4 40 55.54	5.491	19 28 03.2	48.43	23 47.8		
5	4 06 55.17	14.228	23 27 07.2	44.06	1 18.3	5	4 38 45.17	5.357	19 09 06.9	46.17	23 41.8		
6	4 12 28.70	+13.562	+23 43 34.2	+38.21	1 19.9	6	4 36 39.13	-5.132	+18 51 10.9	-43.41	23 35.9		
7	4 17 45.96	12.872	23 57 42.5	32.51	1 21.2	7	4 34 39.54	4.820	18 34 26.8	40.19	23 30.1		
8	4 22 46.35	12.157	24 09 35.8	26.96	1 22.3	8	4 32 48.41	4.429	18 19 05.2	36.55	23 24.5		
9	4 27 29.32	11.420	24 19 17.7	21.56	1 23.0	9	4 31 07.52	3.965	18 05 15.4	32.54	23 19.1		
10	4 31 54.34	10.661	24 26 52.0	16.32	1 23.5	10	4 29 38.58	3.437	17 53 05.6	28.24	23 13.9		
11	4 36 00.89	+9.882	+24 32 22.5	+11.25	1 23.6	11	4 28 22.96	-2.855	+17 42 42.0	-23.69	23 09.0		
12	4 39 48.51	9.082	24 35 53.0	6.33	1 23.5	12	4 27 21.92	2.225	17 34 09.9	18.97	23 04.3		
13	4 43 16.75	8.267	24 37 27.3	+1.56	1 23.0	13	4 26 36.48	1.556	17 27 32.5	14.14	22 59.9		
14	4 46 25.20	7.435	24 37 09.0	-3.06	1 22.2	14	4 26 07.50	0.854	17 22 51.6	9.26	22 55.7		
15	4 49 13.50	6.588	24 35 01.7	7.53	1 21.0	15	4 25 55.66	-0.129	17 20 07.9	-4.39	22 51.9		
16	4 51 41.32	+5.729	+24 31 08.7	-11.85	1 19.5	16	4 26 01.46	+0.615	+17 19 20.6	+0.43	22 48.3		
17	4 53 48.41	4.862	24 25 34.0	16.03	1 17.7	17	4 26 25.30	1.373	17 20 27.7	5.14	22 45.1		
18	4 55 34.64	3.989	24 18 20.6	20.06	1 15.5	18	4 27 07.44	2.140	17 23 26.2	9.70	22 42.1		
19	4 56 59.88	3.115	24 09 32.2	23.95	1 12.9	19	4 28 08.06	2.912	17 28 12.3	14.09	22 39.5		
20	4 58 04.17	2.244	23 59 12.5	27.67	1 10.0	20	4 29 27.24	3.686	17 34 41.1	18.87	22 37.2		
21	4 58 47.68	+1.383	+23 47 25.3	-31.23	1 06.8	21	4 31 05.01	+4.461	+17 42 47.4	+22.21	22 35.2		
22	4 59 10.69	+0.537	23 34 15.0	34.60	1 03.3	22	4 33 01.35	5.234	17 52 25.3	25.90	22 33.5		
23	4 59 13.65	-0.286	23 19 46.2	37.77	0 59.4	23	4 35 16.21	6.005	18 03 28.4	29.31	22 32.1		
24	4 58 57.22	1.078	23 04 03.6	40.71	0 55.2	24	4 37 49.54	6.772	18 15 49.9	32.43	22 31.0		
25	4 58 22.22	1.832	22 47 13.4	43.40	0 50.6	25	4 40 41.24	7.536	18 29 22.6	35.24	22 30.2		
26	4 57 29.67	-2.538	+22 29 22.2	-45.80	0 45.8	26	4 43 51.24	+8.297	+18 43 59.1	+37.74	22 29.7		
27	4 56 20.84	3.188	22 10 37.2	47.88	0 40.7	27	4 47 19.46	9.055	18 59 31.6	39.91	22 29.5		
28	4 54 57.16	3.774	21 51 06.7	49.59	0 35.4	28	4 51 05.84	9.810	19 15 52.0	41.74	22 29.6		
29	4 53 20.28	4.286	21 30 59.9	50.90	0 29.9	29	4 55 10.34	10.564	19 32 52.1	43.21	22 30.0		
30	4 51 32.06	4.718	21 10 27.1	51.76	0 24.2	30	4 59 32.91	11.316	19 50 23.1	44.31	22 30.7		
31	4 49 34.51	-5.062	+20 49 39.3	-52.14	0 18.3	31	5 04 13.49	+12.066	+20 08 16.2	+45.04	22 31.7		
32	4 47 29.80	-5.314	+20 28 48.6	-52.01	0 12.3	32	5 09 12.08	+12.816	+20 26 22.1	+45.38	22 33.0		
Day of the Month.						Day of the Month.							
	1st.	6th.	11th.	16th.	21st.	26th.	31st.	5th.	10th.	15th.	20th.	25th.	30th.
Semidiameter.	3.19	3.59	4.07	4.62	5.19	5.69	6.02	6.06	5.81	5.35	4.81	4.27	3.78
Hor. Parallax.	8.40	9.45	10.73	12.17	13.67	15.01	15.86	15.96	15.31	14.10	12.67	11.25	9.95

NOTE.—The sign + indicates north declinations; the sign — indicates south declinations.

GREENWICH MEAN TIME.

JULY.

AUGUST.

Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ' "	"	h m		h m s	s	° ' "	"	h m
1	5 04 13.49	+12.066	+20 08 16.2	+45.04	22 31.7	1	9 09 46.22	+20.013	+18 12 21.0	-89.13	0 34.2
2	5 09 12.08	12.816	20 26 22.1	45.38	22 33.0	2	9 17 41.66	19.609	17 36 03.9	92.24	0 38.2
3	5 14 28.66	13.564	20 44 31.1	45.30	22 34.7	3	9 25 27.37	19.202	16 58 36.2	95.01	0 42.0
4	5 20 03.15	14.310	21 02 33.2	44.80	22 36.6	4	9 33 03.36	18.798	16 20 05.8	97.47	0 45.7
5	5 25 55.50	15.052	21 20 18.0	43.86	22 38.8	5	9 40 29.71	18.399	15 40 39.9	99.63	0 49.2
6	5 32 05.59	+15.788	+21 37 34.7	+42.46	22 41.3	6	9 47 46.56	+18.007	+15 00 25.6	-101.52	0 52.5
7	5 38 33.26	16.516	21 54 12.2	40.58	22 44.1	7	9 54 54.09	17.622	14 19 29.2	103.14	0 55.7
8	5 45 18.27	17.233	22 09 58.8	38.22	22 47.2	8	10 01 52.49	17.246	13 37 56.8	104.52	0 58.7
9	5 52 20.33	17.935	22 24 42.6	35.35	22 50.5	9	10 08 41.99	16.880	12 55 53.9	105.68	1 01.6
10	5 59 38.96	18.614	22 38 11.7	31.99	22 54.2	10	10 15 22.83	16.535	12 13 25.8	106.62	1 04.3
11	6 07 13.60	+19.267	+22 50 14.2	+28.12	22 58.1	11	10 21 55.25	+16.179	+11 30 37.5	-107.37	1 06.9
12	6 15 03.54	19.888	23 00 37.5	23.74	23 02.2	12	10 28 19.50	15.844	10 47 33.3	107.94	1 09.4
13	6 23 07.89	20.468	23 09 10.1	18.90	23 06.6	13	10 34 35.83	15.519	10 04 17.5	108.34	1 11.7
14	6 31 25.60	21.000	23 15 40.9	13.59	23 11.1	14	10 40 44.48	15.204	9 20 54.1	108.58	1 13.9
15	6 39 55.43	21.479	23 19 59.3	7.88	23 15.9	15	10 46 45.67	14.898	8 37 26.8	108.67	1 16.0
16	6 48 36.00	+21.893	+23 21 56.2	+1.80	23 20.8	16	10 52 39.63	+14.600	+7 53 58.8	-108.63	1 18.0
17	6 57 25.75	22.241	23 21 23.5	-4.57	23 25.8	17	10 58 26.55	14.311	7 10 33.6	108.44	1 19.8
18	7 06 23.01	22.517	23 18 15.0	11.17	23 30.9	18	11 04 06.63	14.030	6 27 14.4	108.14	1 21.5
19	7 15 25.98	22.719	23 12 26.2	17.92	23 36.1	19	11 09 40.03	13.755	5 44 04.0	107.70	1 23.1
20	7 24 32.93	22.846	23 03 54.4	24.73	23 41.3	20	11 15 06.91	13.486	5 01 05.5	107.16	1 24.6
21	7 33 41.97	+22.896	+22 52 39.2	-31.52	23 46.5	21	11 20 27.39	+13.222	+4 18 21.5	-106.49	1 26.0
22	7 42 51.35	22.874	22 38 41.9	38.22	23 51.8	22	11 25 41.59	12.962	3 35 54.8	105.72	1 27.3
23	7 51 59.38	22.784	22 22 05.8	44.75	23 56.9	23	11 30 49.59	12.705	2 53 48.0	104.84	1 28.5
24	8 01 04.48	22.631	22 02 55.7	51.05	0 02.0	24	11 35 51.46	12.451	2 12 03.6	103.84	1 29.6
25	8 10 05.25	22.424	21 41 17.8	57.06	0 02.0	25	11 40 47.24	12.197	1 30 44.4	102.74	1 30.5
26	8 19 00.43	+22.167	+21 17 19.3	-62.75	0 07.0	26	11 45 36.91	+11.943	+0 49 52.9	-101.53	1 31.4
27	8 27 48.95	21.870	20 51 08.5	68.09	0 11.9	27	11 50 20.48	11.688	+0 09 31.7	100.22	1 32.2
28	8 36 29.91	21.539	20 22 54.0	73.05	0 16.6	28	11 54 57.91	11.431	-0 30 16.5	98.78	1 32.9
29	8 45 02.62	21.182	19 52 44.9	77.68	0 21.3	29	11 59 29.12	11.169	1 09 28.8	97.23	1 33.5
30	8 53 26.48	20.803	19 20 50.2	81.85	0 25.7	30	12 03 53.99	10.902	1 48 02.6	95.56	1 33.9
31	9 01 41.08	+20.413	+18 47 19.2	-85.67	0 30.0	31	12 08 12.39	+10.699	-2 25 54.6	-93.76	1 34.3
32	9 09 46.22	+20.013	+18 12 21.0	-89.13	0 34.2	32	12 12 24.14	+10.348	-3 03 01.9	-91.83	1 34.5

Day of the Month.	5th.	10th.	15th.	20th.	25th.	30th.	Day of the Month.	4th.	9th.	14th.	19th.	24th.	29th.
Semidiameter	3.36	3.02	2.76	2.59	2.50	2.48	Semidiameter	2.51	2.57	2.66	2.77	2.91	3.08
Hor. Parallax	8.85	7.94	7.27	6.83	6.60	6.54	Hor. Parallax	6.61	6.76	6.99	7.29	7.68	8.12

The sign + prefixed to the hourly change of declination indicates that north declinations are increasing or south declinations are decreasing. The sign - indicates that north declinations are decreasing or south declinations increasing.

GREENWICH MEAN TIME.

SEPTEMBER.						OCTOBER.					
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.	
	h m s	s	" "	" "	h m		h m s	s	" "	" "	h m
1	12 12 24.14	+10.348	3 03 01.9	-91.83	1 34.5	1	12 38 22.39	-9.343	7 13 42.6	+100.55	23 08.1
2	12 16 29.02	10.056	3 39 21.1	89.76	1 34.6	2	12 34 35.72	9.505	6 32 16.0	106.31	23 46.8
3	12 20 26.75	9.752	4 14 49.0	87.52	1 34.7	3	12 30 48.14	9.416	5 48 57.4	109.84	23 39.2
4	12 24 17.03	9.435	4 49 21.6	85.15	1 34.6	4	12 27 05.83	9.065	5 04 44.1	110.83	23 31.8
5	12 27 59.50	9.101	5 22 54.9	82.59	1 34.3	5	12 23 35.12	8.451	4 20 38.7	109.15	23 24.6
6	12 31 33.75	+8.749	5 55 24.6	-79.85	1 33.9	6	12 20 22.17	-7.587	3 37 45.2	+104.85	23 17.9
7	12 34 59.30	8.376	6 26 46.1	76.90	1 33.4	7	12 17 32.69	6.501	2 57 06.3	97.99	23 11.6
8	12 38 15.61	7.979	6 56 54.1	73.73	1 32.7	8	12 15 11.62	5.226	2 19 39.4	88.90	23 05.9
9	12 41 22.08	7.555	7 25 43.2	70.32	1 31.9	9	12 13 23.00	3.805	1 46 14.1	77.92	23 00.7
10	12 44 18.04	7.102	7 53 07.2	66.64	1 30.9	10	12 12 09.78	2.284	1 17 30.5	65.50	22 56.1
11	12 47 02.74	+6.616	8 18 59.4	-62.66	1 29.6	11	12 11 33.82	-0.708	0 53 57.8	+52.09	22 52.2
12	12 49 35.35	6.095	8 43 12.5	58.37	1 28.2	12	12 11 35.90	+0.880	0 35 54.5	38.12	22 48.9
13	12 51 54.98	5.534	9 05 38.4	53.73	1 26.6	13	12 12 15.85	2.441	0 23 29.3	23.99	22 46.2
14	12 54 00.63	4.930	9 26 08.4	48.70	1 24.7	14	12 13 32.62	3.942	0 16 41.6	+10.05	22 44.1
15	12 55 51.24	4.280	9 44 32.6	43.25	1 22.6	15	12 15 24.50	5.364	0 15 23.1	-3.41	22 42.6
16	12 57 25.69	+3.582	10 00 40.5	-37.33	1 20.3	16	12 17 49.29	+6.683	0 19 19.8	-16.18	22 41.5
17	12 58 42.78	2.833	10 14 20.7	30.93	1 17.6	17	12 20 44.39	7.889	0 28 12.8	28.08	22 40.9
18	12 59 41.26	2.031	10 25 20.7	23.98	1 14.6	18	12 24 07.03	8.978	0 41 40.2	39.02	22 40.8
19	13 00 19.88	1.178	10 33 27.2	16.46	1 11.3	19	12 27 54.37	9.947	0 59 17.8	48.93	22 41.0
20	13 00 37.42	+0.274	10 38 26.3	-8.36	1 07.6	20	12 32 03.57	10.800	1 20 40.8	57.80	22 41.5
21	13 00 32.65	-0.679	10 40 03.5	+0.36	1 03.6	21	12 36 31.94	+11.545	-1 45 24.0	-65.64	22 42.3
22	13 00 04.51	1.672	10 38 04.2	9.69	0 59.2	22	12 41 16.94	12.188	2 13 03.2	72.47	22 43.3
23	12 59 12.15	2.695	10 32 13.9	19.59	0 54.4	23	12 46 16.24	12.739	2 43 14.7	78.34	22 44.5
24	12 57 54.96	3.737	10 22 20.1	29.99	0 49.2	24	12 51 27.74	13.207	3 15 36.7	83.34	22 46.0
25	12 56 12.78	4.776	10 08 11.2	40.81	0 43.5	25	12 56 49.58	13.602	3 49 48.7	87.53	22 47.5
26	12 54 05.91	-5.790	9 49 39.7	+51.85	0 37.5	26	13 02 20.12	+13.934	-4 25 32.1	-90.97	22 49.2
27	12 51 35.32	6.748	9 26 42.4	62.91	0 31.0	27	13 07 57.96	14.211	5 02 29.9	93.74	22 51.0
28	12 48 42.70	7.680	8 59 22.5	73.68	0 24.2	28	13 13 41.88	14.442	5 40 26.9	95.91	22 52.9
29	12 45 30.57	8.367	8 27 50.9	83.82	0 17.1	29	13 19 30.87	14.634	6 19 09.3	97.54	22 54.8
30	12 42 02.37	8.953	7 52 27.6	92.92	0 09.8	30	13 25 24.06	14.794	6 58 25.1	98.70	22 56.8
31	12 38 22.39	-9.343	7 13 42.6	+100.55	23 08.1	31	13 31 20.75	+14.926	-7 38 03.5	-99.44	22 58.9
32	12 34 35.72	-9.505	6 32 16.0	+106.31	23 46.8	32	13 37 20.34	+15.037	-8 17 55.1	-99.80	23 01.0

Day of the Month.	3d.	8th.	13th.	18th.	23d.	28th.	Day of the Month.	3d.	8th.	13th.	18th.	23d.	28th.
Semidiameter . .	3.29	3.56	3.88	4.26	4.68	5.02	Semidiameter . .	5.07	4.69	4.07	3.48	3.06	2.77
Hor. Parallax . .	8.68	9.37	10.22	11.23	12.33	13.24	Hor. Parallax . .	13.37	12.36	10.73	9.19	8.06	7.29

NOTE.—The sign + indicates north declinations; the sign - indicates south declinations.

GREENWICH MEAN TIME.

NOVEMBER.						DECEMBER.								
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.			
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.				
	h m s	s	° ' "	"	h m		h m s	s	° ' "	"	h m			
1	13 37 20.34	+15.037	- 8 17 55.1	-99.80	23 01.0	1	16 48 13.37	+16.813	-23 50 24.8	-41.66	0 11.6			
2	13 43 22.37	15.130	8 57 51.5	99.84	23 03.1	2	16 54 57.63	16.875	24 06 27.6	38.57	0 14.4			
3	13 49 26.46	15.210	9 37 45.2	99.59	23 05.2	3	17 01 43.36	16.935	24 21 15.7	35.43	0 17.2			
4	13 55 32.31	15.277	10 17 29.7	99.08	23 07.4	4	17 08 30.49	16.991	24 34 47.7	32.22	0 20.0			
5	14 01 39.70	15.337	10 56 59.2	98.34	23 09.6	5	17 15 18.91	17.044	24 47 01.7	28.95	0 22.9			
6	14 07 48.44	+15.391	-11 36 08.7	-97.42	23 11.8	6	17 22 08.54	+17.091	-24 57 56.9	-25.63	0 25.8			
7	14 13 58.42	15.440	12 14 53.7	96.31	23 14.1	7	17 28 59.23	17.132	25 07 31.7	22.26	0 28.7			
8	14 20 09.55	15.487	12 53 10.2	95.04	23 16.4	8	17 35 50.85	17.168	25 15 44.8	18.82	0 31.6			
9	14 26 21.77	15.532	13 30 54.6	93.63	23 18.6	9	17 42 43.22	17.195	25 22 34.8	15.34	0 34.6			
10	14 32 35.06	15.576	14 08 03.7	92.10	23 20.9	10	17 49 36.15	17.214	25 28 00.5	11.80	0 37.5			
11	14 38 49.42	+15.621	-14 44 34.6	-90.46	23 23.3	11	17 56 29.41	+17.222	-25 32 00.7	- 8.21	0 40.5			
12	14 45 04.85	15.665	15 20 24.8	88.70	23 25.6	12	18 03 22.74	17.222	25 34 34.2	4.57	0 43.4			
13	14 51 21.37	15.712	15 55 31.7	86.86	23 28.0	13	18 10 15.85	17.204	25 35 39.9	- 0.90	0 46.4			
14	14 57 39.03	15.760	16 29 53.2	84.92	23 30.3	14	18 17 08.41	17.174	25 35 16.9	+ 2.82	0 49.3			
15	15 03 57.85	15.809	17 03 27.2	82.90	23 32.7	15	18 24 00.05	17.127	25 33 24.4	6.56	0 52.2			
16	15 10 17.90	+15.861	-17 36 11.8	-80.80	23 35.1	16	18 30 50.34	+17.061	-25 30 01.7	+10.33	0 55.1			
17	15 16 39.22	15.915	18 08 05.2	78.63	23 37.6	17	18 37 38.82	16.975	25 25 08.3	14.12	0 58.0			
18	15 23 01.86	15.971	18 39 05.7	76.39	23 40.0	18	18 44 24.94	16.865	25 18 44.1	17.91	1 00.8			
19	15 29 25.85	16.029	19 09 11.6	74.09	23 42.5	19	18 51 08.10	16.727	25 10 48.7	21.70	1 03.6			
20	15 35 51.25	16.088	19 38 21.4	71.72	23 45.0	20	18 57 47.62	16.561	25 01 22.9	25.44	1 06.3			
21	15 42 18.11	+16.150	-20 06 33.5	-69.28	23 47.6	21	19 04 22.74	+16.360	-24 50 27.1	+29.16	1 09.0			
22	15 48 46.47	16.214	20 33 46.5	66.79	23 50.1	22	19 10 52.59	16.121	24 38 03.0	32.83	1 11.5			
23	15 55 16.38	16.279	20 59 58.9	64.23	23 52.7	23	19 17 16.18	15.838	24 24 11.8	36.41	1 14.0			
24	16 01 47.86	16.345	21 25 09.2	61.62	23 55.3	24	19 23 32.41	15.506	24 08 56.0	39.87	1 16.3			
25	16 08 20.93	16.411	21 49 16.1	58.95	23 58.0	25	19 29 40.04	15.120	23 52 18.9	43.19	1 18.5			
26	16 14 55.62	+16.479	-22 12 18.1	-56.21		26	19 35 37.65	+14.671	-23 34 24.2	+46.33	1 20.5			
27	16 21 31.94	16.547	22 34 13.7	53.42	0 00.6	27	19 41 23.66	14.151	23 15 16.9	49.24	1 22.3			
28	16 28 09.89	16.614	22 55 01.6	50.56	0 03.3	28	19 46 56.24	13.551	22 55 03.3	51.86	1 23.9			
29	16 34 49.46	16.682	23 14 40.3	47.65	0 06.0	29	19 52 13.40	12.863	22 33 50.4	54.15	1 25.2			
30	16 41 30.63	16.746	23 33 08.6	44.69	0 08.8	30	19 57 12.88	12.076	22 11 47.2	56.04	1 26.2			
31	16 48 13.37	+16.813	-23 50 24.8	-41.66	0 11.6	31	20 01 52.20	+11.181	-21 49 04.1	+57.47	1 26.9			
32	16 54 57.63	+16.875	-24 06 27.6	-38.57	0 14.4	32	20 06 08.60	+10.165	-21 25 53.1	+58.36	1 27.3			
Day of the Month.	2d.	7th.	12th.	17th.	22d.	27th.	Day of the Month.	2d.	7th.	12th.	17th.	22d.	27th.	32d.
Semidiameter	2.57	2.45	2.37	2.32	2.30	2.31	Semidiameter	2.33	2.38	2.47	2.59	2.76	3.02	3.39
Hor. Parallax	6.79	6.45	6.25	6.12	6.07	6.08	Hor. Parallax	6.15	6.28	6.49	6.82	7.28	7.95	8.94

The sign + prefixed to the hourly change of declination indicates that north declinations are increasing or south declinations are decreasing. The sign - indicates that north declinations are decreasing or south declinations increasing.

GREENWICH MEAN TIME.

JANUARY.						FEBRUARY.									
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.				
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.					
	h m s	"	" ' "	"	h m		h m s	s	" ' "	"	h m				
1	19 18 20.69	+13.600	-23 14 09.5	+20.64	0 38.5	1	21 58 20.71	+12.109	-13 59 48.8	+64.30	1 16.3				
2	19 23 46.73	13.569	23 05 32.7	22.42	0 40.0	2	22 03 10.72	12.060	13 33 54.2	65.22	1 17.2				
3	19 29 12.01	13.536	22 56 13.4	24.18	0 41.5	3	22 07 59.56	12.012	13 07 37.9	66.11	1 18.1				
4	19 34 36.46	13.501	22 46 12.1	25.92	0 43.0	4	22 12 47.24	11.964	12 41 00.6	66.97	1 19.0				
5	19 40 00.04	13.464	22 35 29.2	27.64	0 44.5	5	22 17 33.79	11.917	12 14 03.1	67.80	1 19.8				
6	19 45 22.70	+13.425	-22 24 05.1	+29.35	0 45.9	6	22 22 19.24	+11.871	-11 46 46.2	+68.59	1 20.6				
7	19 50 44.39	13.384	22 12 00.4	31.04	0 47.3	7	22 27 03.61	11.826	11 19 10.8	69.35	1 21.4				
8	19 56 05.08	13.341	21 59 15.6	32.70	0 48.7	8	22 31 46.93	11.783	10 51 17.5	70.08	1 22.2				
9	20 01 24.71	13.296	21 45 51.1	34.34	0 50.1	9	22 36 29.23	11.742	10 23 07.2	70.77	1 23.0				
10	20 06 43.26	13.250	21 31 47.5	35.95	0 51.5	10	22 41 10.54	11.702	9 54 40.6	71.43	1 23.7				
11	20 12 00.69	+13.202	-21 17 05.5	+37.54	0 52.8	11	22 45 50.90	+11.663	-9 25 58.5	+72.06	1 24.4				
12	20 17 16.97	13.153	21 01 45.5	39.10	0 54.1	12	22 50 30.35	11.625	8 57 01.7	72.66	1 25.1				
13	20 22 32.08	13.104	20 45 48.3	40.64	0 55.4	13	22 55 08.92	11.589	8 27 50.9	73.23	1 25.8				
14	20 27 46.00	13.054	20 29 14.4	42.15	0 56.7	14	22 59 46.65	11.555	7 58 26.8	73.76	1 26.5				
15	20 32 58.71	13.003	20 12 04.4	43.64	0 58.0	15	23 04 23.58	11.523	7 28 50.3	74.26	1 27.2				
16	20 38 10.18	+12.952	-19 54 19.0	+45.11	0 59.2	16	23 08 59.75	+11.492	-6 59 02.2	+74.73	1 27.9				
17	20 43 20.40	12.900	19 35 59.0	46.54	1 00.4	17	23 13 35.20	11.462	6 29 03.1	75.17	1 28.6				
18	20 48 29.36	12.847	19 17 04.9	47.94	1 01.6	18	23 18 09.97	11.434	5 58 53.8	75.58	1 29.2				
19	20 53 37.06	12.794	18 57 37.5	49.31	1 02.8	19	23 22 44.10	11.408	5 28 35.1	75.96	1 29.8				
20	20 58 43.48	12.741	18 37 37.5	50.65	1 04.0	20	23 27 17.63	11.385	4 58 07.7	76.31	1 30.4				
21	21 03 48.61	+12.687	-18 17 05.7	+51.97	1 05.2	21	23 31 50.60	+11.364	-4 27 32.4	+76.63	1 31.0				
22	21 08 52.45	12.633	17 56 02.7	53.26	1 06.3	22	23 36 23.05	11.344	3 56 49.9	76.91	1 31.6				
23	21 13 55.01	12.579	17 34 29.3	54.51	1 07.4	23	23 40 55.02	11.325	3 26 01.1	77.16	1 32.2				
24	21 18 56.27	12.525	17 12 26.3	55.73	1 08.5	24	23 45 26.55	11.307	2 55 06.6	77.38	1 32.8				
25	21 23 56.25	12.472	16 49 54.4	56.92	1 09.6	25	23 49 57.68	11.290	2 24 07.2	77.56	1 33.3				
26	21 28 54.94	+12.419	-16 26 54.4	+58.07	1 10.6	26	23 54 28.46	+11.275	-1 53 03.6	+77.71	1 33.9				
27	21 33 52.35	12.366	16 03 27.1	59.19	1 11.6	27	23 58 58.93	11.262	1 21 56.7	77.83	1 34.5				
28	21 38 48.51	12.313	15 39 33.4	60.28	1 12.6	28	0 03 29.12	11.251	0 50 47.1	77.92	1 35.1				
29	21 43 43.42	12.261	15 15 13.9	61.34	1 13.6	29	0 07 59.06	11.242	-0 19 35.7	77.99	1 35.6				
30	21 48 37.08	12.210	14 50 29.4	62.36	1 14.5	30	0 12 28.80	11.236	+0 11 36.9	78.03	1 36.1				
31	21 53 29.50	+12.159	-14 25 20.8	+63.35	1 15.4	31	0 16 58.39	+11.231	+0 42 49.9	+78.03	1 36.7				
32	21 58 20.71	+12.109	-13 59 48.8	+64.30	1 16.3	32	0 21 27.87	+11.228	+1 14 02.6	+78.00	1 37.2				
Day of the Month.		1st.	6th.	11th.	16th.	21st.	26th.	31st.	Day of the Month.		5th.	10th.	15th.	20th.	25th.
		"	"	"	"	"	"	"			"	"	"	"	"
Semidiameter.		5.06	5.08	5.11	5.14	5.17	5.20	5.24	Semidiameter		5.28	5.33	5.38	5.44	5.50
Hor. Parallax.		5.21	5.23	5.26	5.29	5.32	5.36	5.40	Hor. Parallax		5.44	5.49	5.54	5.60	5.66

NOTE.—The sign + indicates north declinations; the sign - indicates south declinations.

GREENWICH MEAN TIME.

MARCH.						APRIL.							
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.		
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.			
	h m s	s	° ' "	"	h m		h m s	s	° ' "	"	h m		
1	0 07 59.06	- 11.242	- 0 19 35.7	+ 77.99	1 35.6	1	2 29 08.38	+ 11.768	+ 14 55 53.0	+ 64.75	1 54.5		
2	0 12 28.80	11.236	+ 0 11 36.9	78.03	1 36.1	2	2 33 51.25	11.806	15 21 36.2	63.83	1 55.3		
3	0 16 58.39	11.231	0 42 49.9	78.03	1 36.7	3	2 38 35.03	11.844	15 46 56.9	62.88	1 56.1		
4	0 21 27.87	11.228	1 14 02.6	78.00	1 37.2	4	2 43 19.73	11.882	16 11 54.4	61.90	1 56.9		
5	0 25 57.27	11.226	1 45 14.1	77.94	1 37.7	5	2 48 05.35	11.921	16 36 28.1	60.89	1 57.7		
6	0 30 26.64	+ 11.225	+ 2 16 23.8	+ 77.85	1 38.3	6	2 52 51.91	+ 11.960	+ 17 00 37.1	+ 59.85	1 58.5		
7	0 34 56.01	11.225	2 47 30.9	77.73	1 38.9	7	2 57 39.42	11.999	17 24 20.8	58.78	1 59.4		
8	0 39 25.43	11.227	3 18 34.7	77.58	1 39.4	8	3 02 27.89	12.039	17 47 38.4	57.68	2 00.3		
9	0 43 54.91	11.231	3 49 34.4	77.39	1 39.9	9	3 07 17.32	12.079	18 10 29.2	56.55	2 01.2		
10	0 48 24.50	11.237	4 20 29.4	77.17	1 40.4	10	3 12 07.72	12.119	18 32 52.5	55.39	2 02.1		
11	0 52 54.30	+ 11.245	+ 4 51 18.8	+ 76.92	1 41.0	11	3 16 59.08	+ 12.160	+ 18 54 47.7	+ 54.20	2 03.0		
12	0 57 24.34	11.256	5 22 01.9	76.65	1 41.6	12	3 21 51.42	12.201	19 16 14.0	52.98	2 03.9		
13	1 01 54.63	11.268	5 52 38.1	76.35	1 42.1	13	3 26 44.73	12.242	19 37 10.8	51.73	2 04.8		
14	1 06 25.18	11.281	6 23 06.6	76.01	1 42.7	14	3 31 39.02	12.282	19 57 37.4	50.46	2 05.8		
15	1 10 56.07	11.296	6 53 26.7	75.64	1 43.3	15	3 36 34.27	12.322	20 17 33.1	49.16	2 06.8		
16	1 15 27.33	+ 11.312	+ 7 23 37.7	+ 75.24	1 43.9	16	3 41 30.49	+ 12.362	+ 20 36 57.3	+ 47.84	2 07.8		
17	1 19 59.02	11.330	7 53 38.8	74.82	1 44.5	17	3 46 27.65	12.401	20 55 49.4	46.49	2 08.8		
18	1 24 31.16	11.349	8 23 29.3	74.37	1 45.1	18	3 51 25.75	12.439	21 14 08.7	45.11	2 09.8		
19	1 29 03.79	11.370	8 53 08.5	73.88	1 45.7	19	3 56 24.77	12.477	21 31 54.5	43.70	2 10.8		
20	1 33 36.96	11.393	9 22 35.7	73.36	1 46.3	20	4 01 24.69	12.514	21 49 06.4	42.27	2 11.9		
21	1 38 10.72	+ 11.418	+ 9 51 50.1	+ 72.81	1 46.9	21	4 06 25.48	+ 12.551	+ 22 05 43.8	+ 40.82	2 13.0		
22	1 42 45.08	11.444	10 20 50.9	72.24	1 47.6	22	4 11 27.14	12.587	22 21 46.0	39.34	2 14.1		
23	1 47 20.04	11.471	10 49 37.5	71.63	1 48.2	23	4 16 29.62	12.621	22 37 12.6	37.84	2 15.2		
24	1 51 55.67	11.500	11 18 09.2	70.99	1 48.8	24	4 21 32.90	12.653	22 52 03.0	36.32	2 16.3		
25	1 56 32.02	11.530	11 46 25.0	70.32	1 49.5	25	4 26 36.93	12.684	23 06 16.4	34.78	2 17.4		
26	2 01 09.10	+ 11.561	+ 12 14 24.4	+ 69.62	1 50.2	26	4 31 41.69	+ 12.713	+ 23 19 52.7	+ 33.23	2 18.6		
27	2 05 46.94	11.593	12 42 06.6	68.88	1 50.9	27	4 36 47.14	12.740	23 32 51.3	31.66	2 19.7		
28	2 10 25.56	11.626	13 09 30.8	68.11	1 51.6	28	4 41 53.23	12.765	23 45 11.7	30.07	2 20.8		
29	2 15 05.00	11.660	13 36 36.3	67.31	1 52.3	29	4 46 59.90	12.788	23 56 53.6	28.45	2 22.0		
30	2 19 45.27	11.695	14 03 22.3	66.48	1 53.0	30	4 52 07.11	12.810	24 07 56.4	26.81	2 23.2		
31	2 24 26.39	+ 11.731	+ 14 29 48.1	+ 65.63	1 53.7	31	4 57 14.81	+ 12.830	+ 24 18 19.8	+ 25.15	2 24.4		
32	2 29 08.38	+ 11.768	+ 14 55 53.0	+ 64.75	1 54.5	32	5 02 22.94	+ 12.848	+ 24 28 03.4	+ 23.48	2 25.6		
Day of the Month.						Day of the Month.							
	2d.	7th.	12th.	17th.	22d.	27th.		1st.	6th.	11th.	16th.	21st.	26th.
Semidiameter	5.56	5.63	5.71	5.79	5.88	5.98	Semidiameter	6.09	6.21	6.34	6.48	6.62	6.78
Hor. Parallax	5.73	5.80	5.88	5.96	6.05	6.15	Hor. Parallax	6.27	6.39	6.52	6.66	6.82	6.99

The sign + prefixed to the hourly change of declination indicates that north declinations are increasing or south declinations are decreasing. The sign - indicates that north declinations are decreasing or south declinations increasing.

GREENWICH MEAN TIME.

MAY.						JUNE.								
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.			
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.				
	h m s	s	° ' "	"	h m		h m s	s	° ' "	"	h m			
1	4 57 14.81	+12.830	+24 18 19.8	+25.15	2 24.4	1	7 34 37.24	+12.124	+24 02 19.2	-26.91	2 59.5			
2	5 02 22.94	12.848	24 28 03.4	23.48	2 25.6	2	7 39 27.46	12.060	23 51 15.5	28.40	3 00.4			
3	5 07 31.45	12.863	24 37 06.9	21.80	2 26.8	3	7 44 16.11	11.994	23 39 36.3	29.87	3 01.3			
4	5 12 40.27	12.875	24 45 30.1	20.11	2 28.0	4	7 49 03.15	11.926	23 27 22.2	31.31	3 02.2			
5	5 17 49.35	12.884	24 53 12.6	18.41	2 29.2	5	7 53 48.51	11.855	23 14 33.8	32.72	3 03.0			
6	5 22 58.64	+12.890	+25 00 14.2	+16.71	2 30.4	6	7 58 32.17	+11.782	+23 01 11.7	-34.10	3 03.8			
7	5 28 08.05	12.893	25 06 34.6	15.00	2 31.6	7	8 03 14.08	11.708	22 47 16.5	35.46	3 04.5			
8	5 33 17.51	12.894	25 12 13.7	13.28	2 32.8	8	8 07 54.19	11.633	22 32 48.8	36.80	3 05.2			
9	5 38 26.97	12.893	25 17 11.4	11.55	2 34.0	9	8 12 32.47	11.556	22 17 49.4	38.12	3 05.9			
10	5 43 36.39	12.890	25 21 27.5	9.81	2 35.3	10	8 17 08.89	11.478	22 02 18.9	39.41	3 06.6			
11	5 48 45.69	+12.884	+25 25 01.9	+ 8.06	2 36.5	11	8 21 43.42	+11.398	+21 46 17.9	-40.67	3 07.2			
12	5 53 54.80	12.875	25 27 54.5	6.31	2 37.7	12	8 26 16.04	11.317	21 29 47.0	41.90	3 07.8			
13	5 59 03.65	12.863	25 30 05.3	4.57	2 38.9	13	8 30 46.71	11.236	21 12 47.1	43.10	3 08.4			
14	6 04 12.19	12.848	25 31 34.3	2.83	2 40.1	14	8 35 15.41	11.154	20 55 18.7	44.27	3 08.9			
15	6 09 20.35	12.830	25 32 21.6	+ 1.10	2 41.3	15	8 39 42.12	11.071	20 37 22.6	45.40	3 09.4			
16	6 14 28.06	+12.810	+25 32 27.1	- 0.63	2 42.5	16	8 44 06.81	+10.987	+20 18 59.5	-46.50	3 09.9			
17	6 19 35.25	12.787	25 31 51.2	2.35	2 43.7	17	8 48 29.46	10.902	20 00 10.2	47.58	3 10.3			
18	6 24 41.86	12.762	25 30 33.7	4.07	2 44.9	18	8 52 50.06	10.816	19 40 55.3	48.63	3 10.7			
19	6 29 47.83	12.734	25 28 35.0	5.78	2 46.1	19	8 57 08.58	10.730	19 21 15.6	49.65	3 11.1			
20	6 34 53.08	12.703	25 25 55.1	7.49	2 47.2	20	9 01 25.02	10.643	19 01 11.8	50.64	3 11.4			
21	6 39 57.55	+12.669	+25 22 34.4	- 9.19	2 48.3	21	9 05 39.36	+10.555	+18 40 44.7	-51.60	3 11.7			
22	6 45 01.18	12.633	25 18 33.0	10.88	2 49.4	22	9 09 51.57	10.466	18 19 55.0	52.52	3 12.0			
23	6 50 03.90	12.594	25 13 51.2	12.56	2 50.5	23	9 14 01.64	10.376	17 58 43.5	53.41	3 12.2			
24	6 55 05.66	12.552	25 08 29.3	14.23	2 51.6	24	9 18 09.56	10.285	17 37 10.9	54.27	3 12.4			
25	7 00 06.39	12.507	25 02 27.8	15.88	2 52.7	25	9 22 15.30	10.194	17 15 18.0	55.11	3 12.5			
26	7 05 06.02	+12.460	+24 55 46.9	-17.52	2 53.7	26	9 26 18.85	+10.102	+16 53 05.6	-55.92	3 12.5			
27	7 10 04.48	12.411	24 48 27.0	19.14	2 54.7	27	9 30 20.18	10.009	16 30 34.5	56.69	3 12.6			
28	7 15 01.72	12.359	24 40 28.6	20.73	2 55.7	28	9 34 19.28	9.915	16 07 45.5	57.43	3 12.6			
29	7 19 57.68	12.304	24 31 52.1	22.30	2 56.7	29	9 38 16.12	9.820	15 44 39.3	58.11	3 12.7			
30	7 24 52.29	12.246	24 22 38.0	23.85	2 57.7	30	9 42 10.68	9.725	15 21 16.9	58.76	3 12.7			
31	7 29 45.50	+12.186	+24 12 46.9	-25.39	2 58.6	31	9 46 02.93	+ 9.629	+14 57 39.0	-59.38	3 12.6			
32	7 34 37.24	+12.124	+24 02 19.2	-26.91	2 59.5	32	9 49 52.86	+ 9.532	+14 33 46.4	-59.97	3 12.5			
Day of the Month.						Day of the Month.								
	1st.	6th.	11th.	16th.	21st.	26th.	31st.		5th.	10th.	15th.	20th.	25th.	30th.
Semidiameter .	6.96	7.16	7.37	7.60	7.85	8.13	8.43	Semidiameter	8.76	9.12	9.52	9.96	10.46	11.00
Hor. Parallax .	7.17	7.37	7.59	7.83	8.08	8.37	8.68	Hor. Parallax	9.02	9.39	9.81	10.26	10.77	11.33

NOTE.—The sign + indicates north declinations; the sign - indicates south declinations.

GREENWICH MEAN TIME.

JULY.						AUGUST.					
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ' "	"	h m		h m s	s	° ' "	"	h m
1	9 46 02.93	+9.629	+14 57 39.0	-59.38	3 12.6	1	11 24 28.59	+5.921	+1 49 09.5	-62.07	2 48.7
2	9 49 52.86	9.532	14 33 46.4	59.97	3 12.5	2	11 26 48.67	5.753	1 24 25.8	61.53	2 47.1
3	9 53 40.44	9.434	14 09 39.8	60.53	3 12.3	3	11 29 04.63	5.579	0 59 55.7	60.94	2 45.4
4	9 57 25.66	9.335	13 45 20.0	61.07	3 12.1	4	11 31 16.36	5.399	0 35 40.4	60.30	2 43.6
5	10 01 08.49	9.235	13 20 47.9	61.58	3 11.9	5	11 33 23.72	5.214	+0 11 41.2	59.60	2 41.8
6	10 04 48.92	+9.134	+12 56 04.2	-62.06	3 11.6	6	11 35 26.56	+5.023	-0 12 00.8	-58.85	2 39.9
7	10 08 26.91	9.032	12 31 09.7	62.50	3 11.3	7	11 37 24.74	4.825	0 35 24.1	58.04	2 37.9
8	10 12 02.45	8.929	12 06 05.1	62.90	3 10.9	8	11 39 18.10	4.620	0 58 27.4	57.18	2 35.8
9	10 15 35.51	8.825	11 40 51.3	63.26	3 10.5	9	11 41 06.49	4.410	1 21 09.1	56.26	2 33.7
10	10 19 06.08	8.721	11 15 29.1	63.59	3 10.1	10	11 42 49.75	4.193	1 43 28.0	55.27	2 31.4
11	10 22 34.13	+8.616	+10 49 59.1	-63.89	3 09.6	11	11 44 27.71	+3.969	-2 05 22.3	-54.21	2 29.0
12	10 25 59.62	8.510	10 24 22.3	64.16	3 09.1	12	11 46 00.20	3.737	2 26 50.7	53.09	2 26.6
13	10 29 22.53	8.402	9 58 39.4	64.40	3 08.5	13	11 47 27.04	3.498	2 47 51.2	51.90	2 24.1
14	10 32 42.84	8.292	9 32 51.2	64.61	3 07.9	14	11 48 48.05	3.252	3 08 22.2	50.64	2 21.6
15	10 36 00.51	8.181	9 06 58.4	64.78	3 07.3	15	11 50 03.06	2.998	3 28 21.9	49.30	2 18.9
16	10 39 15.51	+8.069	+ 8 41 01.9	-64.92	3 06.6	16	11 51 11.88	+2.736	-3 47 48.7	-47.89	2 16.1
17	10 42 27.81	7.955	8 15 02.4	65.02	3 05.8	17	11 52 14.31	2.466	4 06 40.4	46.38	2 13.2
18	10 45 37.35	7.839	7 49 00.8	65.09	3 05.0	18	11 53 10.17	2.188	4 24 54.8	44.78	2 10.2
19	10 48 44.10	7.722	7 22 57.9	65.13	3 04.2	19	11 53 59.26	1.902	4 42 30.0	43.10	2 07.1
20	10 51 48.00	7.603	6 56 54.6	65.13	3 03.3	20	11 54 41.39	1.607	4 59 23.7	41.32	2 03.9
21	10 54 49.02	+7.482	+ 6 30 51.6	-65.10	3 02.4	21	11 55 16.36	+1.305	-5 15 33.5	-39.44	2 00.6
22	10 57 47.10	7.358	6 04 49.9	65.03	3 01.4	22	11 55 43.98	0.995	5 30 57.0	37.46	1 57.1
23	11 00 42.17	7.231	5 38 50.3	64.92	3 00.4	23	11 56 04.07	0.677	5 45 31.6	35.37	1 53.4
24	11 03 34.15	7.101	5 12 53.8	64.77	2 59.3	24	11 56 16.44	0.352	5 59 14.9	33.18	1 49.6
25	11 06 22.98	6.967	4 47 01.2	64.59	2 58.2	25	11 56 20.91	+0.020	6 12 04.1	30.87	1 45.7
26	11 09 08.56	+6.830	+ 4 21 13.6	-64.37	2 57.0	26	11 56 17.34	-0.318	-6 23 56.4	-28.44	1 41.7
27	11 11 50.82	6.689	3 55 31.9	64.10	2 55.7	27	11 56 05.60	0.661	6 34 49.0	25.89	1 37.6
28	11 14 29.65	6.544	3 29 57.3	63.79	2 54.4	28	11 55 45.57	1.008	6 44 39.2	23.23	1 33.4
29	11 17 04.95	6.395	3 04 30.7	63.43	2 53.0	29	11 55 17.20	1.357	6 53 24.2	20.46	1 29.0
30	11 19 36.61	6.242	2 39 13.1	63.02	2 51.6	30	11 54 40.44	1.706	7 01 01.2	17.57	1 24.5
31	11 22 04.53	+6.084	+ 2 14 05.7	-62.57	2 50.2	31	11 53 55.29	-2.056	-7 07 27.7	-14.58	1 19.8
32	11 24 28.59	+5.921	+ 1 49 09.5	-62.07	2 48.7	32	11 53 01.76	-2.403	-7 12 40.9	-11.48	1 15.0

Day of the Month.	5th.	10th.	15th.	20th.	25th.	30th.	Day of the Month.	4th.	9th.	14th.	19th.	24th.	29th.
Semidiameter . .	11.60	12.28	13.05	13.90	14.85	15.93	Semidiameter . .	17.15	18.52	20.04	21.72	23.53	25.41
Hor. Parallax . .	11.96	12.64	13.43	14.31	15.29	16.40	Hor. Parallax . .	17.66	19.07	20.64	22.36	24.23	26.17

The sign + prefixed to the hourly change of declination indicates that north declinations are increasing or south declinations are decreasing. The sign - indicates that north declinations are decreasing or south declinations increasing.

GREENWICH MEAN TIME.

SEPTEMBER.						OCTOBER.						
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.	
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.		
	h m s	s	° ' "	"	h m		h m s	s	° ' "	"	h m	
1	11 53 01.76	-2.403	-7 12 40.9	-11.48	1 15.0	1	11 00 43.65	-2.096	-1 16 59.9	+44.38	22 20.2	
2	11 52 00.01	2.742	7 16 38.6	8.28	1 10.0	2	10 59 57.87	1.719	0 59 31.6	42.93	22 15.6	
3	11 50 50.19	3.075	7 19 18.5	5.01	1 04.8	3	10 59 21.20	1.337	0 42 40.4	41.32	22 11.1	
4	11 49 32.49	3.399	7 20 38.9	-1.65	0 59.5	4	10 58 53.73	0.952	0 26 29.4	39.56	22 06.8	
5	11 48 07.14	3.710	7 20 38.0	+1.76	0 54.1	5	10 58 35.51	0.567	-0 11 02.5	37.67	22 02.7	
6	11 46 34.52	-4.006	-7 19 14.5	+5.22	0 48.6	6	10 58 26.51	-0.183	+0 03 37.9	+35.67	21 58.8	
7	11 44 55.03	4.282	7 16 27.6	8.69	0 43.1	7	10 58 26.70	+0.198	0 17 28.8	33.58	21 55.2	
8	11 43 09.16	4.537	7 12 17.4	12.16	0 37.5	8	10 58 35.99	0.575	0 30 29.0	31.43	21 51.7	
9	11 41 17.42	4.770	7 06 43.7	15.62	0 31.8	9	10 58 54.26	0.946	0 42 36.3	29.19	21 48.3	
10	11 39 20.41	4.976	6 59 47.7	19.04	0 26.0	10	10 59 21.37	1.311	0 53 50.0	26.93	21 44.9	
11	11 37 18.79	-5.154	-6 51 30.2	+22.39	0 20.1	11	10 59 57.13	+1.668	+1 04 09.1	+24.63	21 41.6	
12	11 35 13.27	5.301	6 41 54.0	25.63	0 14.0	12	11 00 41.36	2.016	1 13 32.2	22.30	21 38.4	
13	11 33 04.62	5.414	6 31 01.1	28.74	0 07.8	13	11 01 33.84	2.355	1 21 59.1	19.95	21 35.3	
14	11 30 53.65	5.494	6 18 55.6	31.70	0 01.6	14	11 02 34.34	2.684	1 29 29.9	17.61	21 32.4	
15	11 28 41.17	5.539	6 05 40.9	34.48	23 49.4	15	11 03 42.61	3.003	1 36 04.5	15.28	21 29.8	
16	11 26 28.05	-5.548	-5 51 21.8	+37.06	23 43.3	16	11 04 58.41	+3.312	+1 41 43.2	+12.95	21 27.3	
17	11 24 15.14	5.582	5 36 03.5	39.41	23 37.2	17	11 06 21.48	3.609	1 46 26.3	10.65	21 24.9	
18	11 22 03.29	5.460	5 19 51.8	41.54	23 31.2	18	11 07 51.57	3.896	1 50 14.5	8.37	21 22.6	
19	11 19 53.36	5.362	5 02 51.8	43.41	23 25.2	19	11 09 28.42	4.173	1 53 08.3	6.12	21 20.4	
20	11 17 46.17	5.231	4 45 10.5	44.99	23 19.2	20	11 11 11.77	4.438	1 55 08.5	3.91	21 18.3	
21	11 15 42.51	-5.068	-4 26 54.6	+46.29	23 13.3	21	11 13 01.37	+4.694	+1 56 15.9	+1.73	21 16.3	
22	11 13 43.15	4.874	4 08 10.8	47.31	23 07.4	22	11 14 56.99	4.939	1 56 31.4	-0.42	21 14.3	
23	11 11 48.81	4.650	3 49 05.9	48.05	23 01.6	23	11 16 58.38	5.175	1 55 55.8	2.52	21 12.4	
24	11 10 00.16	4.400	3 29 46.8	48.49	22 55.9	24	11 19 05.32	5.401	1 54 30.2	4.59	21 10.6	
25	11 08 17.81	4.125	3 10 20.3	48.67	22 50.4	25	11 21 17.58	5.617	1 52 15.5	6.61	21 08.9	
26	11 06 42.34	-3.827	-2 50 53.0	+48.56	22 45.1	26	11 23 34.96	+5.826	+1 49 12.8	-8.59	21 07.4	
27	11 05 14.26	3.510	2 31 31.6	48.19	22 39.9	27	11 25 57.25	6.026	1 45 23.1	10.53	21 06.0	
28	11 03 54.00	3.176	2 12 21.7	47.58	22 34.8	28	11 28 24.27	6.217	1 40 47.3	12.43	21 04.6	
29	11 02 41.95	2.827	1 53 29.7	46.73	22 29.8	29	11 30 55.81	6.399	1 35 26.4	14.28	21 03.3	
30	11 01 38.41	2.466	1 35 00.6	45.65	22 24.9	30	11 33 31.70	6.576	1 29 21.6	16.08	21 02.0	
31	11 00 43.65	-2.096	-1 16 59.9	+44.38	22 20.2	31	11 36 11.76	+6.748	+1 22 34.1	-17.84	21 00.7	
32	10 59 57.87	-1.719	-0 59 31.6	+42.93	22 15.6	32	11 38 55.83	+6.914	+1 15 04.8	-19.56	20 59.5	
Day of the Month.							Day of the Month.					
3d.							3d.					
8th.							8th.					
13th.							13th.					
18th.							18th.					
23d.							23d.					
28th.							28th.					
Semidiameter .							Semidiameter .					
Hor. Parallax .							Hor. Parallax .					
27.23							27.35					
28.79							25.58					
29.87							23.74					
30.27							21.97					
29.91							20.34					
28.88							18.84					
28.03							28.17					
29.63							26.34					
30.74							24.45					
31.16							22.62					
30.79							20.93					
29.71							19.40					

NOTE.—The sign + indicates north declinations; the sign - indicates south declinations.

GREENWICH MEAN TIME.

NOVEMBER.						DECEMBER.								
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.			
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.				
	h m s	s	° ' "	"	h m		h m s	s	° ' "	"	h m			
1	11 38 55.83	+6.914	+1 15 04.8	-19.56	20 59.5	1	13 22 22.12	+9.848	-6 23 05.1	-50.15	20 45.7			
2	11 41 43.75	7.075	1 06 54.8	21.24	20 58.4	2	13 26 19.25	9.913	6 43 12.9	50.50	20 45.8			
3	11 44 35.38	7.229	0 58 05.2	22.87	20 57.4	3	13 30 17.92	9.977	7 03 28.8	50.83	20 45.8			
4	11 47 30.56	7.376	0 48 37.2	24.45	20 56.5	4	13 34 18.12	10.041	7 23 52.1	51.11	20 45.9			
5	11 50 29.16	7.516	0 38 31.7	25.99	20 55.6	5	13 38 19.84	10.104	7 44 21.7	51.35	20 46.0			
6	11 53 31.06	+7.649	+0 27 49.8	-27.48	20 54.7	6	13 42 23.07	+10.167	-8 04 56.6	-51.55	20 46.1			
7	11 56 36.12	7.775	0 16 32.7	28.92	20 53.9	7	13 46 27.81	10.229	8 25 36.0	51.71	20 46.3			
8	11 59 44.22	7.897	+0 04 41.5	30.32	20 53.2	8	13 50 34.04	10.291	8 46 18.8	51.83	20 46.5			
9	12 02 55.25	8.015	-0 07 42.7	31.68	20 52.5	9	13 54 41.76	10.352	9 07 04.1	51.91	20 46.7			
10	12 06 09.10	8.130	0 20 38.9	32.99	20 51.8	10	13 58 50.95	10.413	9 27 51.0	51.95	20 46.9			
11	12 09 25.65	+8.242	-0 34 05.9	-34.25	20 51.1	11	14 03 01.61	+10.474	-9 48 38.4	-51.95	20 47.2			
12	12 12 44.80	8.351	0 48 02.6	35.46	20 50.5	12	14 07 13.73	10.535	10 09 25.4	51.93	20 47.5			
13	12 16 06.46	8.455	1 02 27.8	36.62	20 50.0	13	14 11 27.30	10.595	10 30 11.1	51.87	20 47.8			
14	12 19 30.53	8.554	1 17 20.4	37.74	20 49.5	14	14 15 42.32	10.655	10 50 54.5	51.77	20 48.1			
15	12 22 56.92	8.649	1 32 39.4	38.81	20 49.0	15	14 19 58.77	10.715	11 11 34.6	51.62	20 48.4			
16	12 26 25.55	+8.740	-1 48 23.7	-39.84	20 48.5	16	14 24 16.65	+10.775	-11 32 10.5	-51.42	20 48.8			
17	12 29 56.33	8.826	2 04 32.1	40.83	20 48.1	17	14 28 35.95	10.834	11 52 41.3	51.16	20 49.2			
18	12 33 29.19	8.910	2 21 03.6	41.78	20 47.8	18	14 32 56.67	10.892	12 13 06.0	50.87	20 49.6			
19	12 37 04.07	8.992	2 37 57.1	42.68	20 47.5	19	14 37 18.81	10.951	12 33 23.7	50.55	20 50.0			
20	12 40 40.90	9.072	2 55 11.5	43.53	20 47.2	20	14 41 42.36	11.010	12 53 33.6	50.20	20 50.5			
21	12 44 19.63	+9.150	-3 12 45.9	-44.33	20 46.9	21	14 46 07.32	+11.069	-13 13 34.6	-49.82	20 51.0			
22	12 48 00.20	9.227	3 30 39.2	45.09	20 46.7	22	14 50 33.69	11.128	13 33 25.9	49.42	20 51.5			
23	12 51 42.57	9.302	3 48 50.3	45.81	20 46.5	23	14 55 01.47	11.186	13 53 06.6	48.98	20 52.1			
24	12 55 26.69	9.375	4 07 18.3	46.49	20 46.3	24	14 59 30.66	11.244	14 12 35.7	48.49	20 52.7			
25	12 59 12.54	9.446	4 26 02.2	47.13	20 46.1	25	15 04 01.25	11.303	14 31 52.5	47.95	20 53.3			
26	13 03 00.08	+9.516	-4 45 01.0	-47.73	20 45.9	26	15 08 33.25	+11.362	-14 50 56.0	-47.37	20 53.9			
27	13 06 49.28	9.584	5 04 13.8	48.30	20 45.8	27	15 13 06.66	11.421	15 09 45.3	46.74	20 54.5			
28	13 10 40.10	9.651	5 23 39.5	48.83	20 45.8	28	15 17 41.47	11.480	15 28 19.6	46.09	20 55.1			
29	13 14 32.53	9.717	5 43 17.2	49.31	20 45.7	29	15 22 17.69	11.539	15 46 38.0	45.40	20 55.8			
30	13 18 26.54	9.783	6 03 06.1	49.75	20 45.7	30	15 26 55.31	11.597	16 04 39.7	44.69	20 56.5			
31	13 22 22.12	+9.848	-6 23 05.1	-50.15	20 45.7	31	15 31 34.33	+11.655	-16 22 23.8	-43.95	20 57.3			
32	13 26 19.25	+9.913	-6 43 12.9	-50.50	20 45.8	32	15 36 14.75	+11.713	-16 39 49.4	-43.17	20 58.0			
Day of the Month.	2d.	7th.	12th.	17th.	22d.	27th.	Day of the Month.	2d.	7th.	12th.	17th.	22d.	27th.	32d.
Semidiameter	17.49	16.29	15.23	14.28	13.44	12.69	Semidiameter	12.01	11.41	10.86	10.38	9.93	9.53	9.16
Hor. Parallax	18.02	16.78	15.68	14.70	13.84	13.07	Hor. Parallax	12.37	11.75	11.19	10.68	10.22	9.81	9.43

The sign + prefixed to the hourly change of declination indicates that north declinations are increasing or south declinations are decreasing. The sign — indicates that north declinations are decreasing or south declinations increasing.

GREENWICH MEAN TIME.

JANUARY.						FEBRUARY.							
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.		
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.			
	h m s	s	" "	"	h m		h m s	s	" "	"	h m		
1	12 23 01.68	+ 3.700	+ 0 06 57.6	- 21.42	17 41.4	1	12 58 21.43	+ 1.774	- 3 05 00.2	- 8.32	16 14.1		
2	12 24 29.93	3.655	- 0 01 32.7	21.11	17 38.8	2	12 59 02.98	1.687	3 08 13.6	7.78	16 10.8		
3	12 25 57.13	3.609	0 09 55.4	20.79	17 36.3	3	12 59 42.43	1.599	3 11 13.9	7.23	16 07.5		
4	12 27 23.23	3.563	0 18 10.2	20.46	17 33.8	4	13 00 19.73	1.509	3 14 00.8	6.67	16 04.2		
5	12 28 48.22	3.517	0 26 17.1	20.12	17 31.3	5	13 00 54.85	1.418	3 16 34.2	6.11	16 00.8		
6	12 30 12.08	+ 3.470	- 0 34 15.8	- 19.77	17 28.8	6	13 01 27.77	+ 1.325	- 3 18 54.0	- 5.54	15 57.4		
7	12 31 34.78	3.422	0 42 06.3	19.42	17 26.2	7	13 01 58.43	1.230	3 21 00.0	4.96	15 53.9		
8	12 32 56.30	3.373	0 49 48.4	19.07	17 23.6	8	13 02 26.80	1.134	3 22 52.0	4.37	15 50.4		
9	12 34 16.63	3.322	0 57 21.9	18.71	17 21.0	9	13 02 52.83	1.036	3 24 29.9	3.78	15 46.9		
10	12 35 35.74	3.270	1 04 46.6	18.35	17 18.4	10	13 03 16.50	0.936	3 25 53.5	3.18	15 43.3		
11	12 36 53.59	+ 3.217	- 1 12 02.5	- 17.98	17 15.7	11	13 03 37.75	+ 0.834	- 3 27 02.6	- 2.57	15 39.7		
12	12 38 10.18	3.163	1 19 09.5	17.60	17 13.0	12	13 03 56.53	0.730	3 27 57.1	1.96	15 36.1		
13	12 39 25.46	3.108	1 26 07.2	17.21	17 10.3	13	13 04 12.81	0.625	3 28 36.7	1.34	15 32.4		
14	12 40 39.42	3.052	1 32 55.4	16.81	17 07.6	14	13 04 26.55	0.518	3 29 01.4	0.71	15 28.7		
15	12 41 52.01	2.995	1 39 34.1	16.41	17 04.9	15	13 04 37.69	0.409	3 29 10.9	- 0.08	15 24.9		
16	12 43 03.20	+ 2.937	- 1 46 03.1	- 16.00	17 02.1	16	13 04 46.19	+ 0.298	- 3 29 05.1	+ 0.56	15 21.1		
17	12 44 12.97	2.877	1 52 22.2	15.58	16 59.3	17	13 04 52.00	0.185	3 28 43.8	1.21	15 17.2		
18	12 45 21.28	2.815	1 58 31.1	15.15	16 56.5	18	13 04 55.09	+ 0.071	3 28 06.8	1.86	15 13.3		
19	12 46 28.08	2.751	2 04 29.7	14.71	16 53.7	19	13 04 55.42	- 0.044	3 27 14.1	2.52	15 09.4		
20	12 47 33.33	2.686	2 10 17.7	14.27	16 50.8	20	13 04 52.95	0.162	3 26 05.5	3.19	15 05.3		
21	12 48 37.00	+ 2.619	- 2 15 55.0	- 13.82	16 47.9	21	13 04 47.65	- 0.281	- 3 24 41.0	+ 3.86	15 01.2		
22	12 49 39.05	2.550	2 21 21.3	13.36	16 45.0	22	13 04 39.49	0.401	3 23 00.5	4.53	14 57.1		
23	12 50 39.43	2.480	2 26 36.5	12.89	16 42.0	23	13 04 28.44	0.522	3 21 03.9	5.20	14 53.0		
24	12 51 38.11	2.408	2 31 40.4	12.41	16 39.0	24	13 04 14.48	0.643	3 18 51.3	5.87	14 48.9		
25	12 52 35.05	2.335	2 36 32.7	11.93	16 36.0	25	13 03 57.59	0.765	3 16 22.6	6.53	14 44.6		
26	12 53 30.20	+ 2.260	- 2 41 13.3	- 11.44	16 32.9	26	13 03 37.75	- 0.887	- 3 13 37.9	+ 7.19	14 40.3		
27	12 54 23.54	2.183	2 45 42.0	10.94	16 29.8	27	13 03 14.96	1.010	3 10 37.1	7.85	14 35.9		
28	12 55 15.01	2.105	2 49 58.6	10.43	16 26.7	28	13 02 49.22	1.134	3 07 20.4	8.51	14 31.6		
29	12 56 04.57	2.025	2 54 02.9	9.91	16 23.6	29	13 02 20.51	1.257	3 03 48.0	9.17	14 27.2		
30	12 56 52.19	1.943	2 57 54.7	9.39	16 20.5	30	13 01 48.86	1.380	3 00 00.0	9.82	14 22.7		
31	12 57 37.82	+ 1.859	- 3 01 33.9	- 8.86	16 17.3	31	13 01 14.27	- 1.502	- 2 55 56.5	+ 10.46	14 18.1		
32	12 58 21.43	+ 1.774	- 3 05 00.2	- 8.32	16 14.1	32	13 00 36.78	- 1.623	- 2 51 37.8	+ 11.09	14 13.5		
Day of the Month.	1st.	6th.	11th.	16th.	21st.	26th.	31st.	Day of the Month.	5th.	10th.	15th.	20th.	25th.
Semidiameter .	3.99	4.15	4.33	4.52	4.72	4.94	5.17	Semidiameter .	5.42	5.68	5.96	6.25	6.54
Hor. Parallax .	6.95	7.23	7.54	7.87	8.22	8.60	9.01	Hor. Parallax .	9.44	9.90	10.38	10.87	11.37

NOTE.—The sign + indicates north declinations; the sign — indicates south declinations.

GREENWICH MEAN TIME.

MARCH.						APRIL.					
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ' "	"	h m		h m s	s	° ' "	"	h m
1	13 02 20.51	-1.257	-3 03 48.0	+ 9.17	14 27.2	1	12 27 36.01	-3.670	+ 0 19 57.5	+19.03	11 50.3
2	13 01 48.86	1.380	3 00 00.0	9.82	14 22.7	2	12 26 08.03	3.659	0 27 31.4	18.76	11 44.9
3	13 01 14.27	1.502	2 55 56.5	10.46	14 18.1	3	12 24 40.40	3.641	0 34 58.8	18.46	11 39.5
4	13 00 36.78	1.623	2 51 37.8	11.09	14 13.5	4	12 23 13.29	3.616	0 42 18.7	18.13	11 34.1
5	12 59 56.39	1.742	2 47 04.1	11.71	14 08.9	5	12 21 46.86	3.584	0 49 30.1	17.77	11 28.7
6	12 59 13.15	-1.860	-2 42 15.7	+12.32	14 04.3	6	12 20 21.28	-3.545	+ 0 56 32.1	+17.37	11 23.4
7	12 58 27.08	1.977	2 37 12.9	12.91	13 59.5	7	12 18 56.70	3.500	1 03 24.0	16.94	11 18.1
8	12 57 38.24	2.092	2 31 56.2	13.49	13 54.7	8	12 17 33.26	3.449	1 10 04.9	16.47	11 12.8
9	12 56 46.65	2.205	2 26 25.8	14.05	13 49.9	9	12 16 11.11	3.393	1 16 33.9	15.97	11 07.5
10	12 55 52.38	2.316	2 20 42.2	14.59	13 45.1	10	12 14 50.38	3.332	1 22 50.4	15.43	11 02.2
11	12 54 55.47	-2.425	-2 14 45.7	+15.11	13 40.2	11	12 13 31.21	-3.264	+1 28 53.7	+14.85	10 57.0
12	12 53 55.99	2.531	2 08 36.9	15.61	13 35.3	12	12 12 13.72	3.191	1 34 43.3	14.25	10 51.8
13	12 52 54.00	2.634	2 02 16.2	16.09	13 30.3	13	12 10 58.03	3.113	1 40 18.5	13.64	10 46.6
14	12 51 49.58	2.734	1 55 44.2	16.55	13 25.3	14	12 09 44.25	3.031	1 45 38.6	13.01	10 41.5
15	12 50 42.78	2.830	1 49 01.4	16.98	13 20.3	15	12 08 32.48	2.945	1 50 43.3	12.36	10 36.4
16	12 49 33.71	-2.923	-1 42 08.4	+17.39	13 15.2	16	12 07 22.85	-2.855	+1 55 32.0	+11.69	10 31.3
17	12 48 22.44	3.013	1 35 06.0	17.78	13 10.0	17	12 06 15.44	2.761	2 00 04.2	11.00	10 26.3
18	12 47 09.09	3.098	1 27 54.8	18.14	13 04.8	18	12 05 10.35	2.663	2 04 19.5	10.29	10 21.3
19	12 45 53.75	3.178	1 20 35.5	18.46	12 59.6	19	12 04 07.65	2.561	2 08 17.7	9.57	10 16.4
20	12 44 36.55	3.253	1 13 09.0	18.74	12 54.4	20	12 03 07.45	2.456	2 11 58.4	8.83	10 11.5
21	12 43 17.61	-3.323	-1 05 36.0	+18.99	12 49.2	21	12 02 09.80	-2.347	+ 2 15 21.0	+8.07	10 06.6
22	12 41 57.05	3.388	0 57 57.6	19.20	12 43.9	22	12 01 14.79	2.236	2 18 25.7	7.31	10 01.8
23	12 40 35.01	3.447	0 50 14.5	19.37	12 38.6	23	12 00 22.46	2.123	2 21 12.1	6.54	9 57.0
24	12 39 11.64	3.500	0 42 27.8	19.50	12 33.3	24	11 59 32.88	2.008	2 23 40.0	5.77	9 52.3
25	12 37 47.09	3.546	0 34 38.3	19.59	12 28.0	25	11 58 46.10	1.890	2 25 49.2	4.99	9 47.6
26	12 36 21.53	-3.583	-0 26 47.2	+19.64	12 22.6	26	11 58 02.17	-1.770	+ 2 27 39.7	+4.21	9 42.9
27	12 34 55.10	3.616	0 18 55.4	19.65	12 17.3	27	11 57 21.12	1.649	2 29 11.5	3.42	9 38.4
28	12 33 27.98	3.641	0 11 03.9	19.62	12 12.0	28	11 56 42.99	1.527	2 30 24.3	2.63	9 33.9
29	12 32 00.33	3.659	-0 03 13.8	19.55	12 06.6	29	11 56 07.80	1.404	2 31 18.3	1.85	9 29.4
30	12 30 32.34	3.670	+ 0 04 33.8	19.43	12 01.2	30	11 55 35.58	1.281	2 31 53.5	1.07	9 24.9
31	12 29 04.17	-3.674	+ 0 12 17.9	+19.26	11 55.7	31	11 55 06.32	-1.157	+ 2 32 09.9	+0.30	9 20.4
32	12 27 36.01	-3.670	+ 0 19 57.5	+19.03	11 50.3	32	11 54 40.05	-1.033	+ 2 32 07.7	-0.47	9 16.1

Day of the Month.	2d.	7th.	12th.	17th.	22d.	27th.	Day of the Month.	1st.	6th.	11th.	16th.	21st.	26th.
Semidiameter . . .	6.82	7.09	7.35	7.57	7.75	7.86	Semidiameter . . .	7.92	7.90	7.83	7.70	7.52	7.31
Hor. Parallax . . .	11.88	12.36	12.80	13.18	13.49	13.69	Hor. Parallax . . .	13.79	13.77	13.64	13.40	13.10	12.73

The sign + prefixed to the hourly change of declination indicates that north declinations are increasing or south declinations are decreasing. The sign - indicates that north declinations are decreasing or south declinations increasing.

GREENWICH MEAN TIME.

MAY.						JUNE.					
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ' "	"	h m		h m s	s	° ' "	"	h m
1	11 55 06.32	-1.157	+2 32 09.9	+ 0.30	9 20.4	1	12 02 34.76	+2.141	+0 24 56.5	-19.19	7 26.4
2	11 54 40.05	1.033	2 32 07.7	- 0.47	9 16.1	2	12 03 27.14	2.223	0 17 10.1	19.65	7 23.4
3	11 54 16.74	0.910	2 31 47.0	1.23	9 11.8	3	12 04 21.47	2.303	0 09 12.7	20.10	7 20.4
4	11 53 56.40	0.787	2 31 08.0	1.99	9 07.6	4	12 05 17.71	2.382	+0 01 04.6	20.55	7 17.4
5	11 53 39.01	0.664	2 30 10.9	2.74	9 03.4	5	12 06 15.81	2.459	-0 07 13.9	20.99	7 14.4
6	11 53 24.55	-0.542	+2 28 55.9	- 3.49	8 59.2	6	12 07 15.74	+2.534	-0 15 42.7	-21.42	7 11.5
7	11 53 12.99	0.421	2 27 23.2	4.23	8 55.1	7	12 08 17.46	2.608	0 24 21.6	21.83	7 08.6
8	11 53 04.31	0.301	2 25 33.0	4.96	8 51.1	8	12 09 20.94	2.680	0 33 10.2	22.23	7 05.7
9	11 52 58.49	0.183	2 23 25.6	5.67	8 47.1	9	12 10 26.13	2.751	0 42 08.3	22.62	7 02.9
10	11 52 55.49	-0.066	2 21 01.2	6.37	8 43.1	10	12 11 33.02	2.821	0 51 15.8	23.00	7 00.1
11	11 52 55.29	+0.049	+2 18 20.2	- 7.05	8 39.1	11	12 12 41.55	+2.890	-1 00 32.5	-23.37	6 57.3
12	11 52 57.84	0.163	2 15 22.7	7.72	8 35.3	12	12 13 51.71	2.957	1 09 57.9	23.74	6 54.5
13	11 53 03.11	0.276	2 12 09.0	8.39	8 31.5	13	12 15 03.46	3.023	1 19 32.1	24.10	6 51.8
14	11 53 11.07	0.387	2 08 39.3	9.05	8 27.7	14	12 16 16.77	3.087	1 29 14.8	24.45	6 49.1
15	11 53 21.69	0.497	2 04 54.0	9.70	8 23.9	15	12 17 31.62	3.150	1 39 05.8	24.80	6 46.4
16	11 53 34.92	+0.605	+2 00 53.2	-10.35	8 20.2	16	12 18 47.98	+3.213	-1 49 05.0	-25.14	6 43.7
17	11 53 50.75	0.712	1 56 37.2	10.99	8 16.6	17	12 20 05.83	3.275	1 59 12.1	25.47	6 41.1
18	11 54 09.13	0.818	1 52 06.3	11.62	8 13.0	18	12 21 25.14	3.336	2 09 27.0	25.79	6 38.5
19	11 54 30.03	0.922	1 47 20.7	12.23	8 09.4	19	12 22 45.90	3.396	2 19 49.5	26.10	6 35.9
20	11 54 53.41	1.025	1 42 20.4	12.82	8 05.8	20	12 24 08.08	3.454	2 30 19.4	26.40	6 33.3
21	11 55 19.24	+1.127	+1 37 05.9	-13.39	8 02.3	21	12 25 31.67	+3.512	-2 40 56.6	-26.70	6 30.8
22	11 55 47.48	1.227	1 31 37.5	13.96	7 58.9	22	12 26 56.64	3.569	2 51 40.9	26.99	6 28.3
23	11 56 18.09	1.326	1 25 55.4	14.52	7 55.5	23	12 28 22.97	3.625	3 02 32.1	27.27	6 25.8
24	11 56 51.05	1.423	1 19 59.7	15.08	7 52.1	24	12 29 50.65	3.681	3 13 30.1	27.55	6 23.3
25	11 57 26.31	1.518	1 13 50.8	15.63	7 48.8	25	12 31 19.66	3.736	3 24 34.7	27.82	6 20.9
26	11 58 03.85	+1.612	+1 07 28.8	-16.18	7 45.5	26	12 32 49.98	+3.790	-3 35 45.7	-28.08	6 18.5
27	11 58 43.64	1.704	1 00 54.0	16.72	7 42.3	27	12 34 21.59	3.843	3 47 03.0	28.34	6 16.1
28	11 59 25.63	1.795	0 54 06.6	17.25	7 39.1	28	12 35 54.46	3.895	3 58 26.3	28.59	6 13.7
29	12 00 09.78	1.884	0 47 06.9	17.76	7 35.9	29	12 37 28.57	3.946	4 09 55.5	28.83	6 11.3
30	12 00 56.04	1.971	0 39 55.2	18.25	7 32.7	30	12 39 03.90	3.997	4 21 30.4	29.07	6 08.9
31	12 01 44.38	+2.057	+0 32 31.6	-18.72	7 29.5	31	12 40 40.43	+4.047	-4 33 10.7	-29.30	6 06.6
32	12 02 34.76	+2.141	+0 24 56.5	-19.19	7 26.4	32	12 42 18.14	+4.096	-4 44 56.3	-29.52	6 04.3

Day of the Month.	1st.	6th.	11th.	16th.	21st.	26th.	31st.	Day of the Month.	5th.	10th.	15th.	20th.	25th.	30th.
Semidiameter.	7.08	6.83	6.58	6.34	6.10	5.87	5.64	Semidiameter	5.43	5.24	5.06	4.89	4.73	4.58
Hor. Parallax.	12.32	11.88	11.46	11.03	10.62	10.22	9.83	Hor. Parallax	9.47	9.13	8.81	8.51	8.23	7.97

NOTE.—The sign + indicates north declinations; the sign — indicates south declinations.

GREENWICH MEAN TIME.

JULY.						AUGUST.							
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.		
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.			
	h m s	s	° ' "	"	h m		h m s	s	° ' "	"	h m		
1	12 40 40.43	+4.047	4 33 10.7	-29.30	6 06.6	1	13 39 13.25	+5.343	11 04 51.4	-32.82	5 03.2		
2	12 42 18.14	4.096	4 44 56.3	29.52	6 04.3	2	13 41 21.93	5.380	11 17 59.1	32.82	5 01.4		
3	12 43 57.01	4.144	4 56 47.0	29.73	6 02.0	3	13 43 31.49	5.417	11 31 06.8	32.82	4 59.6		
4	12 45 37.02	4.191	5 08 42.7	29.93	5 59.7	4	13 45 41.94	5.454	11 44 14.3	32.81	4 57.8		
5	12 47 18.15	4.237	5 20 43.1	30.11	5 57.5	5	13 47 53.26	5.491	11 57 21.5	32.79	4 56.0		
6	12 49 00.38	+4.283	5 32 48.0	-30.29	5 55.3	6	13 50 05.46	+5.527	12 10 28.2	-32.76	4 54.3		
7	12 50 43.70	4.328	5 44 57.3	30.47	5 53.1	7	13 52 18.54	5.563	12 23 34.1	32.73	4 52.6		
8	12 52 28.09	4.372	5 57 10.8	30.64	5 50.9	8	13 54 32.48	5.599	12 36 39.2	32.69	4 50.9		
9	12 54 13.55	4.416	6 09 28.4	30.81	5 48.7	9	13 56 47.29	5.635	12 49 43.2	32.64	4 49.2		
10	12 56 00.05	4.459	6 21 49.8	30.97	5 46.5	10	13 59 02.97	5.671	13 02 46.0	32.58	4 47.5		
11	12 57 47.59	+4.502	6 34 15.0	-31.12	5 44.4	11	14 01 19.52	+5.707	13 15 47.5	-32.52	4 45.8		
12	12 59 36.16	4.545	6 46 43.7	31.26	5 42.3	12	14 03 36.93	5.743	13 28 47.4	32.45	4 44.2		
13	13 01 25.75	4.587	6 59 15.8	31.40	5 40.2	13	14 05 55.21	5.779	13 41 45.5	32.38	4 42.6		
14	13 03 16.34	4.629	7 11 51.2	31.53	5 38.1	14	14 08 14.36	5.816	13 54 41.8	32.30	4 41.0		
15	13 05 07.93	4.670	7 24 29.7	31.66	5 36.0	15	14 10 34.38	5.852	14 07 36.0	32.21	4 39.4		
16	13 07 00.52	+4.711	7 37 11.1	-31.78	5 33.9	16	14 12 55.28	+5.889	14 20 28.0	-32.11	4 37.8		
17	13 08 54.10	4.752	7 49 55.3	31.89	5 31.9	17	14 15 17.05	5.926	14 33 17.5	32.01	4 36.2		
18	13 10 48.67	4.793	8 02 42.2	32.00	5 29.9	18	14 17 39.70	5.963	14 46 04.5	31.90	4 34.6		
19	13 12 44.22	4.834	8 15 31.6	32.10	5 27.9	19	14 20 03.22	5.999	14 58 48.8	31.78	4 33.1		
20	13 14 40.74	4.875	8 28 23.4	32.20	5 25.9	20	14 22 27.63	6.036	15 11 30.2	31.66	4 31.6		
21	13 16 38.24	+4.915	8 41 17.3	-32.29	5 23.9	21	14 24 52.92	+6.072	15 24 08.5	-31.53	4 30.1		
22	13 18 36.70	4.955	8 54 13.3	32.37	5 21.9	22	14 27 19.09	6.109	15 36 43.6	31.39	4 28.6		
23	13 20 36.13	4.995	9 07 11.3	32.45	5 19.9	23	14 29 46.14	6.145	15 49 15.2	31.24	4 27.1		
24	13 22 36.52	5.035	9 20 11.0	32.52	5 18.0	24	14 32 14.07	6.182	16 01 43.2	31.09	4 25.6		
25	13 24 37.85	5.075	9 33 12.3	32.58	5 16.1	25	14 34 42.87	6.218	16 14 07.4	30.93	4 24.1		
26	13 26 40.13	+5.114	9 46 15.0	-32.63	5 14.2	26	14 37 12.55	+6.254	16 26 27.6	-30.76	4 22.7		
27	13 28 43.36	5.153	9 59 19.0	32.68	5 12.3	27	14 39 43.09	6.290	16 38 43.5	30.58	4 21.3		
28	13 30 47.51	5.192	10 12 24.1	32.72	5 10.4	28	14 42 14.50	6.326	16 50 55.0	30.39	4 19.9		
29	13 32 52.58	5.230	10 25 30.0	32.76	5 08.6	29	14 44 46.77	6.362	17 03 01.9	30.19	4 18.5		
30	13 34 58.57	5.268	10 38 36.7	32.79	5 06.8	30	14 47 19.88	6.398	17 15 04.0	29.98	4 17.1		
31	13 37 05.46	+5.306	10 51 43.9	-32.81	5 05.0	31	14 49 53.86	+6.434	17 27 01.0	-29.76	4 15.7		
32	13 39 13.25	+5.343	11 04 51.4	-32.82	5 03.2	32	14 52 28.68	+6.469	17 38 52.8	-29.54	4 14.3		
Day of the Month.	5th.	10th.	15th.	20th.	25th.	30th.	Day of the Month.	4th.	9th.	14th.	19th.	24th.	29th.
Semidiameter	4.44	4.31	4.19	4.08	3.98	3.88	Semidiameter	3.79	3.70	3.62	3.55	3.48	3.41
Hor. Parallax	7.73	7.51	7.30	7.10	6.92	6.75	Hor. Parallax	6.59	6.45	6.31	6.18	6.06	5.94

The sign + prefixed to the hourly change of declination indicates that north declinations are increasing or south declinations are decreasing. The sign - indicates that north declinations are decreasing or south declinations increasing.

GREENWICH MEAN TIME.

SEPTEMBER.						OCTOBER.						
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.	
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.		
	h m s	s	" "	"	h m		h m s	s	" "	"	h m	
1	14 52 28.68	+6.469	-17 38 52.8	-29.54	4 14.3	1	16 16 21.93	+7.493	-22 37 57.3	-19.06	3 40.0	
2	14 55 04.36	6.504	17 50 39.1	29.31	4 13.0	2	16 19 22.10	7.523	22 45 29.2	18.58	3 39.1	
3	14 57 40.88	6.539	18 02 19.8	29.07	4 11.7	3	16 22 23.00	7.552	22 52 49.6	18.10	3 38.2	
4	15 00 18.25	6.575	18 13 54.7	28.83	4 10.4	4	16 25 24.61	7.581	22 59 58.2	17.61	3 37.3	
5	15 02 56.45	6.610	18 25 23.6	28.58	4 09.1	5	16 28 26.93	7.610	23 06 54.9	17.11	3 36.4	
6	15 05 35.50	+6.645	-18 36 46.2	-28.32	4 07.8	6	16 31 29.94	+7.639	-23 13 39.6	-16.60	3 35.5	
7	15 08 15.39	6.680	18 48 02.4	28.05	4 06.5	7	16 34 33.64	7.668	23 20 11.9	16.09	3 34.6	
8	15 10 56.12	6.715	18 59 12.0	27.76	4 05.2	8	16 37 38.02	7.697	23 26 31.8	15.57	3 33.7	
9	15 13 37.69	6.750	19 10 14.8	27.47	4 03.9	9	16 40 43.08	7.725	23 32 39.1	15.04	3 32.8	
10	15 16 20.10	6.785	19 21 10.6	27.17	4 02.7	10	16 43 48.80	7.753	23 38 33.5	14.50	3 32.0	
11	15 19 03.34	+6.820	-19 31 59.2	-26.87	4 01.5	11	16 46 55.17	+7.780	-23 44 15.0	-13.96	3 31.2	
12	15 21 47.43	6.855	19 42 40.4	26.56	4 00.3	12	16 50 02.19	7.806	23 49 43.3	13.41	3 30.4	
13	15 24 32.36	6.890	19 53 13.9	26.24	3 59.1	13	16 53 09.85	7.832	23 54 58.3	12.85	3 29.6	
14	15 27 18.13	6.925	20 03 39.7	25.91	3 57.9	14	16 56 18.13	7.858	23 59 59.9	12.28	3 28.8	
15	15 30 04.74	6.960	20 13 57.5	25.57	3 56.7	15	16 59 27.03	7.883	24 04 47.8	11.71	3 28.0	
16	15 32 52.19	+6.995	-20 24 07.2	-25.22	3 55.6	16	17 02 36.53	+7.908	-24 09 22.0	-11.13	3 27.2	
17	15 35 40.48	7.030	20 34 08.5	24.87	3 54.5	17	17 05 46.63	7.933	24 13 42.2	10.55	3 26.4	
18	15 38 29.61	7.065	20 44 01.2	24.51	3 53.4	18	17 08 57.31	7.957	24 17 48.4	9.96	3 25.7	
19	15 41 19.57	7.099	20 53 45.2	24.14	3 52.3	19	17 12 08.56	7.980	24 21 40.4	9.36	3 24.9	
20	15 44 10.37	7.133	21 03 20.3	23.76	3 51.2	20	17 15 20.36	8.002	24 25 18.0	8.76	3 24.1	
21	15 47 02.00	+7.167	-21 12 46.2	-23.38	3 50.1	21	17 18 32.69	+8.024	-24 28 41.2	-8.15	3 23.4	
22	15 49 54.44	7.201	21 22 02.7	23.09	3 49.0	22	17 21 45.54	8.045	24 31 49.7	7.54	3 22.7	
23	15 52 47.69	7.234	21 31 09.7	22.59	3 48.0	23	17 24 58.89	8.066	24 34 43.5	6.93	3 22.0	
24	15 55 41.75	7.267	21 40 06.9	22.19	3 46.9	24	17 28 12.73	8.086	24 37 22.5	6.31	3 21.3	
25	15 58 36.60	7.300	21 48 54.1	21.77	3 45.9	25	17 31 27.03	8.105	24 39 46.4	5.68	3 20.6	
26	16 01 32.24	+7.333	-21 57 31.1	-21.34	3 44.9	26	17 34 41.78	+8.123	-24 41 55.2	-5.05	3 19.9	
27	16 04 28.66	7.366	22 05 57.9	20.90	3 43.9	27	17 37 56.95	8.140	24 43 48.8	4.41	3 19.2	
28	16 07 25.85	7.399	22 14 14.2	20.45	3 42.9	28	17 41 12.52	8.157	24 45 27.1	3.77	3 18.5	
29	16 10 23.80	7.431	22 22 19.6	19.99	3 41.9	29	17 44 28.48	8.173	24 46 49.9	3.13	3 17.8	
30	16 13 22.49	7.462	22 30 14.0	19.53	3 40.9	30	17 47 44.82	8.188	24 47 57.2	2.48	3 17.1	
31	16 16 21.93	+7.493	-22 37 57.3	-19.06	3 40.0	31	17 51 01.51	+8.202	-24 48 48.9	-1.83	3 16.4	
32	16 19 22.10	+7.523	-22 45 29.2	-18.58	3 39.1	32	17 54 18.53	+8.216	-24 49 24.9	-1.17	3 15.8	
Day of the Month.						Day of the Month.						
	3d.	8th.	13th.	18th.	23d.		3d.	8th.	13th.	18th.	23d.	25th.
Semidiameter .	3.35	3.29	3.23	3.18	3.13	Semidiameter .	3.03	2.99	2.95	2.91	2.87	2.84
Hor. Parallax .	5.83	5.73	5.63	5.54	5.45	Hor. Parallax .	5.29	5.22	5.14	5.07	5.00	4.95

NOTE.—The sign + indicates north declinations; the sign - indicates south declinations.

GREENWICH MEAN TIME.

NOVEMBER.						DECEMBER.					
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ' "	"	h m		h m s	s	° ' "	"	h m
1	17 54 18.53	+8.216	-24 49 24.9	- 1.17	3 15.8	1	19 33 58.92	+8.285	-23 02 25.8	+ 18.94	2 57.3
2	17 57 35.87	8.229	24 49 45.1	- 0.51	3 15.2	2	19 37 17.66	8.276	22 54 43.6	19.58	2 56.6
3	18 00 53.50	8.241	24 49 49.5	+ 0.15	3 14.5	3	19 40 36.18	8.266	22 46 46.0	20.22	2 56.0
4	18 04 11.41	8.252	24 49 37.9	0.81	3 13.8	4	19 43 54.46	8.256	22 38 33.1	20.86	2 55.4
5	18 07 29.59	8.262	24 49 10.3	1.48	3 13.2	5	19 47 12.49	8.246	22 30 05.0	21.49	2 54.8
6	18 10 48.01	+8.272	-24 48 26.6	+ 2.15	3 12.6	6	19 50 30.26	+8.235	-22 21 21.8	+ 22.11	2 54.1
7	18 14 06.66	8.281	24 47 26.9	2.82	3 12.0	7	19 53 47.77	8.224	22 12 23.7	22.73	2 53.4
8	18 17 25.52	8.289	24 46 11.0	3.49	3 11.3	8	19 57 05.00	8.212	22 03 10.7	23.34	2 52.8
9	18 20 44.58	8.297	24 44 38.9	4.17	3 10.7	9	20 00 21.94	8.200	21 53 42.9	23.95	2 52.1
10	18 24 03.82	8.304	24 42 50.5	4.85	3 10.1	10	20 03 38.59	8.187	21 44 00.5	24.56	2 51.5
11	18 27 23.23	+8.311	-24 40 45.9	+ 5.53	3 09.5	11	20 06 54.93	+8.174	-21 34 03.7	+ 25.16	2 50.8
12	18 30 42.79	8.318	24 38 24.9	6.21	3 08.9	12	20 10 10.96	8.161	21 23 52.5	25.76	2 50.1
13	18 34 02.48	8.323	24 35 47.7	6.88	3 08.2	13	20 13 26.66	8.147	21 13 27.1	26.35	2 49.4
14	18 37 22.29	8.327	24 32 54.1	7.55	3 07.6	14	20 16 42.03	8.133	21 02 47.7	26.93	2 48.7
15	18 40 42.20	8.331	24 29 44.2	8.23	3 07.0	15	20 19 57.06	8.119	20 51 54.3	27.51	2 48.0
16	18 44 02.19	+8.334	-24 26 18.0	+ 8.92	3 06.4	16	20 23 11.74	+8.104	-20 40 47.2	+ 28.08	2 47.3
17	18 47 22.25	8.337	24 22 35.4	9.61	3 05.8	17	20 26 26.05	8.089	20 29 26.5	28.64	2 46.6
18	18 50 42.35	8.339	24 18 36.5	10.29	3 05.2	18	20 29 40.00	8.073	20 17 52.4	29.20	2 45.9
19	18 54 02.48	8.340	24 14 21.4	10.97	3 04.6	19	20 32 53.57	8.057	20 06 05.0	29.75	2 45.2
20	18 57 22.61	8.340	24 09 50.0	11.65	3 04.0	20	20 36 06.75	8.041	19 54 04.5	30.29	2 44.5
21	19 00 42.72	+8.339	-24 05 02.4	+ 12.32	3 03.4	21	20 39 19.54	+8.024	-19 41 51.2	+ 30.82	2 43.8
22	19 04 02.80	8.336	23 59 58.6	12.99	3 02.8	22	20 42 31.92	8.007	19 29 25.2	31.35	2 43.0
23	19 07 22.83	8.333	23 54 38.7	13.66	3 02.2	23	20 45 43.89	7.990	19 16 46.6	31.87	2 42.3
24	19 10 42.79	8.329	23 49 02.7	14.33	3 01.6	24	20 48 55.45	7.972	19 03 55.7	32.38	2 41.6
25	19 14 02.65	8.325	23 43 10.7	15.00	3 01.0	25	20 52 06.58	7.954	18 50 52.6	32.88	2 40.9
26	19 17 22.40	+8.320	-23 37 02.7	+ 15.66	3 00.4	26	20 55 17.28	+7.936	-18 37 37.5	+ 33.37	2 40.1
27	19 20 42.03	8.315	23 30 38.8	16.32	2 59.7	27	20 58 27.54	7.918	18 24 10.6	33.86	2 39.3
28	19 24 01.51	8.309	23 23 59.1	16.98	2 59.1	28	21 01 37.36	7.900	18 10 32.1	34.35	2 38.5
29	19 27 20.83	8.302	23 17 03.6	17.64	2 58.5	29	21 04 46.73	7.882	17 56 42.3	34.82	2 37.7
30	19 30 39.97	8.294	23 09 52.5	18.29	2 57.9	30	21 07 55.65	7.863	17 42 41.3	35.28	2 36.9
31	19 33 58.92	+8.285	-23 02 25.8	+ 18.94	2 57.3	31	21 11 04.12	+7.844	-17 28 29.2	+ 35.73	2 36.0
32	19 37 17.66	+8.276	-22 54 43.6	+ 19.58	2 56.6	32	21 14 12.14	+7.825	-17 14 06.3	+ 36.17	2 35.2

Day of the Month.	2d.	7th.	12th.	17th.	22d.	27th.	Day of the Month.	2d.	7th.	12th.	17th.	22d.	27th.	32d.
Semidiameter .	2.80	2.77	2.74	2.71	2.68	2.65	Semidiameter .	2.62	2.59	2.56	2.54	2.51	2.49	2.47
Hor. Parallax .	4.89	4.83	4.77	4.72	4.66	4.61	Hor. Parallax .	4.56	4.52	4.47	4.42	4.38	4.34	4.29

The sign + prefixed to the hourly change of declination indicates that north declinations are increasing or south declinations are decreasing. The sign - indicates that north declinations are decreasing or south declinations increasing.

GREENWICH MEAN TIME.

JANUARY.						FEBRUARY.							
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.		
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.			
	h m s	s	° ' "	"	h m		h m s	s	° ' "	"	h m		
1	21 24 34.35	+ 2.107	- 16 05 17.0	+ 9.93	2 44.4	1	21 52 08.84	+ 2.301	- 13 48 41.9	+ 11.93	1 09.9		
2	21 25 25.06	2.118	16 01 17.7	10.01	2 41.3	2	21 53 04.09	2.304	13 43 55.0	11.98	1 06.9		
3	21 26 16.01	2.128	15 57 16.5	10.09	2 38.2	3	21 53 59.39	2.306	13 39 07.0	12.03	1 03.9		
4	21 27 07.19	2.137	15 53 13.4	10.17	2 35.1	4	21 54 54.74	2.308	13 34 18.0	12.07	1 00.9		
5	21 27 58.59	2.146	15 49 08.5	10.25	2 32.0	5	21 55 50.13	2.309	13 29 27.9	12.11	0 57.8		
6	21 28 50.21	+ 2.155	- 15 45 01.7	+ 10.32	2 28.9	6	21 56 45.55	+ 2.310	- 13 24 36.9	+ 12.15	0 54.8		
7	21 29 42.04	2.164	15 40 53.1	10.40	2 25.9	7	21 57 41.01	2.311	13 19 44.9	12.19	0 51.8		
8	21 30 34.07	2.172	15 36 42.8	10.47	2 22.8	8	21 58 36.49	2.312	13 14 52.0	12.22	0 48.8		
9	21 31 26.30	2.180	15 32 30.7	10.54	2 19.7	9	21 59 31.99	2.312	13 09 58.2	12.26	0 45.8		
10	21 32 18.72	2.188	15 28 16.9	10.61	2 16.6	10	22 00 27.50	2.313	13 05 03.5	12.30	0 42.8		
11	21 33 11.33	+ 2.196	- 15 24 01.4	+ 10.68	2 13.6	11	22 01 23.03	+ 2.314	- 13 00 07.9	+ 12.33	0 39.8		
12	21 34 04.12	2.203	15 19 44.1	10.75	2 10.5	12	22 02 18.58	2.314	12 55 11.5	12.37	0 36.8		
13	21 34 57.07	2.210	15 15 25.2	10.82	2 07.5	13	22 03 14.12	2.314	12 50 14.3	12.40	0 33.7		
14	21 35 50.19	2.217	15 11 04.7	10.89	2 04.4	14	22 04 09.66	2.314	12 45 16.4	12.43	0 30.7		
15	21 36 43.48	2.224	15 06 42.6	10.95	2 01.4	15	22 05 05.19	2.313	12 40 17.7	12.46	0 27.7		
16	21 37 36.92	+ 2.230	- 15 02 18.9	+ 11.02	1 58.3	16	22 06 00.72	+ 2.313	- 12 35 18.3	+ 12.49	0 24.7		
17	21 38 30.51	2.236	14 57 53.6	11.09	1 55.3	17	22 06 56.24	2.313	12 30 18.2	12.52	0 21.7		
18	21 39 24.25	2.242	14 53 26.7	11.15	1 52.3	18	22 07 51.74	2.312	12 25 17.5	12.55	0 18.7		
19	21 40 18.13	2.248	14 48 58.2	11.22	1 49.3	19	22 08 47.21	2.311	12 20 16.1	12.57	0 15.7		
20	21 41 12.15	2.254	14 44 28.2	11.28	1 46.2	20	22 09 42.66	2.310	12 15 14.1	12.59	0 12.7		
21	21 42 06.29	+ 2.259	- 14 39 56.8	+ 11.34	1 43.2	21	22 10 38.08	+ 2.309	- 12 10 11.6	+ 12.61	0 09.6		
22	21 43 00.56	2.264	14 35 24.0	11.40	1 40.1	22	22 11 33.46	2.307	12 05 08.6	12.63	0 06.6		
23	21 43 54.95	2.269	14 30 49.7	11.46	1 37.1	23	22 12 28.79	2.305	12 00 05.1	12.65	0 03.6		
24	21 44 49.46	2.273	14 26 14.0	11.51	1 34.0	24	22 13 24.08	2.303	11 55 01.2	12.67	0 00.6		
25	21 45 44.07	2.277	14 21 37.0	11.57	1 31.0	25	22 14 19.31	2.301	11 49 56.9	12.69	23 54.6		
26	21 46 38.78	+ 2.281	- 14 16 58.6	+ 11.63	1 28.0	26	22 15 14.48	+ 2.298	- 11 44 52.2	+ 12.70	23 51.6		
27	21 47 33.58	2.285	14 12 18.9	11.68	1 25.0	27	22 16 09.59	2.295	11 39 47.2	12.72	23 48.6		
28	21 48 28.48	2.289	14 07 37.9	11.73	1 21.9	28	22 17 04.65	2.292	11 34 41.9	12.73	23 45.6		
29	21 49 23.46	2.292	14 02 55.7	11.78	1 18.9	29	22 17 59.62	2.289	11 29 36.3	12.74	23 42.6		
30	21 50 18.51	2.295	13 58 12.3	11.83	1 15.9	30	22 18 54.51	2.286	11 24 30.5	12.75	23 39.6		
31	21 51 13.64	+ 2.298	- 13 53 27.7	+ 11.88	1 12.9	31	22 19 49.32	+ 2.283	- 11 19 24.6	+ 12.75	23 36.5		
32	21 52 08.84	+ 2.301	- 13 48 41.9	+ 11.93	1 09.9	32	22 20 44.06	+ 2.279	- 11 14 18.5	+ 12.76	23 33.5		
Day of the Month.						Day of the Month.							
			3d.	11th.	19th.	27th.				4th.	12th.	20th.	28th.
Semidiameter			16.29	16.11	15.95	15.83	Semidiameter			15.75	15.70	15.69	15.70
Horizontal Parallax			1.52	1.51	1.49	1.48	Horizontal Parallax			1.47	1.47	1.47	1.47

NOTE.—The sign + indicates north declinations; the sign - indicates south declinations.

GREENWICH MEAN TIME.

MARCH.						APRIL.					
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ' "	"	h m		h m s	s	° ' "	"	h m
1	22 17 59.62	+2.289	-11 29 36.3	+12.74	23 42.6	1	22 45 23.05	+2.100	-8 52 49.8	+12.30	22 07.9
2	22 18 54.51	2.286	11 24 30.5	12.75	23 39.6	2	22 46 13.34	2.091	8 47 55.0	12.26	22 04.8
3	22 19 49.32	2.283	11 19 24.6	12.75	23 36.5	3	22 47 03.40	2.081	8 43 01.2	12.22	22 01.7
4	22 20 44.06	2.279	11 14 18.5	12.76	23 33.5	4	22 47 53.23	2.072	8 38 08.4	12.18	21 58.5
5	22 21 38.69	2.275	11 09 12.3	12.76	23 30.5	5	22 48 42.83	2.062	8 33 16.5	12.14	21 55.4
6	22 22 33.22	+2.271	-11 04 06.0	+12.76	23 27.4	6	22 49 32.19	+2.052	-8 28 25.7	+12.09	21 52.3
7	22 23 27.65	2.266	10 58 59.7	12.76	23 24.4	7	22 50 21.31	2.042	8 23 36.1	12.04	21 49.2
8	22 24 21.97	2.261	10 53 53.4	12.76	23 21.4	8	22 51 10.19	2.032	8 18 47.7	11.99	21 46.0
9	22 25 16.18	2.256	10 48 47.1	12.76	23 18.4	9	22 51 58.82	2.021	8 14 00.5	11.94	21 42.9
10	22 26 10.27	2.251	10 43 40.9	12.76	23 15.3	10	22 52 47.20	2.011	8 09 14.4	11.89	21 39.8
11	22 27 04.24	+2.246	-10 38 34.8	+12.75	23 12.3	11	22 53 35.32	+2.000	-8 04 29.7	+11.84	21 36.7
12	22 27 58.10	2.241	10 33 28.7	12.75	23 09.2	12	22 54 23.18	1.989	7 59 46.3	11.78	21 33.5
13	22 28 51.83	2.236	10 28 22.9	12.74	23 06.2	13	22 55 10.78	1.978	7 55 04.2	11.73	21 30.4
14	22 29 45.42	2.231	10 23 17.3	12.73	23 03.1	14	22 55 58.12	1.967	7 50 23.4	11.67	21 27.2
15	22 30 38.88	2.225	10 18 11.9	12.72	23 00.1	15	22 56 45.18	1.955	7 45 44.1	11.61	21 24.1
16	22 31 32.20	+2.219	-10 13 06.6	+12.71	22 57.0	16	22 57 31.96	+1.944	-7 41 06.3	+11.55	21 20.9
17	22 32 25.39	2.213	10 08 01.7	12.70	22 54.0	17	22 58 18.45	1.932	7 36 30.0	11.49	21 17.8
18	22 33 18.43	2.207	10 02 57.1	12.69	22 50.9	18	22 59 04.67	1.920	7 31 55.2	11.42	21 14.6
19	22 34 11.31	2.200	9 57 52.9	12.67	22 47.8	19	22 59 50.59	1.908	7 27 22.0	11.35	21 11.4
20	22 35 04.04	2.194	9 52 49.1	12.65	22 44.7	20	23 00 36.21	1.895	7 22 50.4	11.28	21 08.2
21	22 35 56.61	+2.187	-9 47 45.8	+12.63	22 41.7	21	23 01 21.54	+1.882	-7 18 20.5	+11.21	21 05.0
22	22 36 49.02	2.180	9 42 43.0	12.61	22 38.6	22	23 02 06.57	1.869	7 13 52.3	11.14	21 01.8
23	22 37 41.26	2.173	9 37 40.6	12.59	22 35.6	23	23 02 51.27	1.856	7 09 25.9	11.07	20 58.6
24	22 38 33.33	2.166	9 32 38.7	12.57	22 32.5	24	23 03 35.65	1.842	7 05 01.3	10.99	20 55.4
25	22 39 25.23	2.159	9 27 37.5	12.54	22 29.5	25	23 04 19.71	1.829	7 00 38.5	10.91	20 52.2
26	22 40 16.94	+2.151	-9 22 37.0	+12.51	22 26.4	26	23 05 03.44	+1.815	-6 56 17.6	+10.83	20 49.0
27	22 41 08.46	2.143	9 17 37.2	12.48	22 23.3	27	23 05 46.83	1.801	6 51 58.7	10.75	20 45.8
28	22 41 59.78	2.134	9 12 38.1	12.45	22 20.2	28	23 06 29.88	1.787	6 47 41.8	10.67	20 42.6
29	22 42 50.91	2.126	9 07 39.7	12.42	22 17.1	29	23 07 12.59	1.772	6 43 26.9	10.58	20 39.4
30	22 43 41.83	2.118	9 02 42.2	12.38	22 14.1	30	23 07 54.94	1.757	6 39 14.0	10.49	20 36.1
31	22 44 32.54	+2.109	-8 57 45.6	+12.34	22 11.0	31	23 08 36.93	+1.742	-6 35 03.3	+10.40	20 32.9
32	22 45 23.05	+2.100	-8 52 49.8	+12.30	22 07.9	32	23 09 18.56	+1.727	-6 30 54.8	+10.31	20 29.6
Day of the Month.						Day of the Month.					
8th.						1st.					
16th.						9th.					
24th.						17th.					
25th.						25th.					
Semidiameter						Semidiameter					
Horizontal Parallax						Horizontal Parallax					

The sign + prefixed to the hourly change of declination indicates that north declinations are increasing or south declinations are decreasing. The sign - indicates that north declinations are decreasing or south declinations increasing.

GREENWICH MEAN TIME.

MAY.						JUNE.											
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.						
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.							
	h m s	s	" "	"	h m		h m s	s	" "	"	h m						
1	23 08 36.93	+1.742	-6 35 03.3	+10.40	20 32.9	1	23 26 53.19	+1.166	-4 46 48.4	+6.77	18 49.0						
2	23 09 18.56	1.727	6 30 54.8	10.31	20 29.6	2	23 27 20.91	1.144	4 44 07.8	6.62	18 45.5						
3	23 09 59.82	1.711	6 26 48.6	10.22	20 26.4	3	23 27 48.09	1.121	4 41 30.7	6.47	18 42.0						
4	23 10 40.70	1.696	6 22 44.5	10.13	20 23.1	4	23 28 14.73	1.098	4 38 57.1	6.32	18 38.5						
5	23 11 21.20	1.680	6 18 42.7	10.03	20 19.9	5	23 28 40.82	1.075	4 36 27.1	6.17	18 35.0						
6	23 12 01.32	+1.664	-6 14 43.3	+9.93	20 16.6	6	23 29 06.35	+1.052	-4 34 00.7	+6.02	18 31.5						
7	23 12 41.07	1.648	6 10 46.2	9.83	20 13.3	7	23 29 31.31	1.029	4 31 38.0	5.87	18 28.0						
8	23 13 20.42	1.632	6 06 51.5	9.73	20 10.0	8	23 29 55.71	1.005	4 29 19.0	5.71	18 24.5						
9	23 13 59.37	1.615	6 02 59.2	9.63	20 06.7	9	23 30 19.54	0.981	4 27 03.7	5.56	18 20.9						
10	23 14 37.92	1.598	5 59 09.4	9.53	20 03.4	10	23 30 42.79	0.957	4 24 52.2	5.40	18 17.4						
11	23 15 16.06	+1.581	-5 55 22.1	+9.42	20 00.1	11	23 31 05.46	+0.932	-4 22 44.6	+5.24	18 13.8						
12	23 15 53.80	1.564	5 51 37.4	9.31	19 56.8	12	23 31 27.54	0.907	4 20 40.8	5.08	18 10.2						
13	23 16 31.12	1.547	5 47 55.3	9.20	19 53.5	13	23 31 49.03	0.882	4 18 40.9	4.92	18 06.6						
14	23 17 08.02	1.529	5 44 15.8	9.09	19 50.2	14	23 32 09.91	0.857	4 16 45.0	4.75	18 03.0						
15	23 17 44.49	1.511	5 40 38.9	8.98	19 46.9	15	23 32 30.18	0.832	4 14 53.0	4.58	17 59.4						
16	23 18 20.53	+1.493	-5 37 04.8	+8.87	19 43.5	16	23 32 49.85	+0.807	-4 13 05.0	+4.41	17 55.8						
17	23 18 56.13	1.474	5 33 33.5	8.75	19 40.2	17	23 33 08.90	0.781	4 11 21.1	4.24	17 52.2						
18	23 19 31.28	1.455	5 30 05.0	8.63	19 36.8	18	23 33 27.32	0.755	4 09 41.3	4.07	17 48.6						
19	23 20 05.99	1.436	5 26 39.4	8.51	19 33.5	19	23 33 45.10	0.728	4 08 05.7	3.90	17 44.9						
20	23 20 40.24	1.417	5 23 16.6	8.39	19 30.1	20	23 34 02.25	0.701	4 06 34.2	3.73	17 41.3						
21	23 21 14.02	+1.398	-5 19 56.9	+8.26	19 26.7	21	23 34 18.76	+0.674	-4 05 07.0	+3.55	17 37.6						
22	23 21 47.33	1.379	5 16 40.2	8.14	19 23.3	22	23 34 34.61	0.647	4 03 44.1	3.37	17 33.9						
23	23 22 20.17	1.359	5 13 26.5	8.01	19 19.9	23	23 34 49.81	0.620	4 02 25.4	3.19	17 30.2						
24	23 22 52.53	1.339	5 10 15.9	7.88	19 16.5	24	23 35 04.36	0.592	4 01 11.0	3.01	17 26.5						
25	23 23 24.39	1.318	5 07 08.5	7.75	19 13.1	25	23 35 18.23	0.564	4 00 00.9	2.83	17 22.8						
26	23 23 55.75	+1.297	-5 04 04.3	+7.61	19 09.6	26	23 35 31.43	+0.536	-3 58 55.2	+2.65	17 19.1						
27	23 24 26.62	1.276	5 01 03.3	7.47	19 06.2	27	23 35 43.96	0.508	3 57 53.9	2.47	17 15.3						
28	23 24 56.98	1.254	4 58 05.5	7.33	19 02.8	28	23 35 55.81	0.480	3 56 57.0	2.28	17 11.6						
29	23 25 26.82	1.232	4 55 11.1	7.19	18 59.4	29	23 36 06.98	0.451	3 56 04.6	2.09	17 07.8						
30	23 25 56.14	1.210	4 52 20.1	7.05	18 55.9	30	23 36 17.46	0.423	3 55 16.7	1.91	17 04.1						
31	23 26 24.93	+1.188	-4 49 32.6	+6.91	18 52.5	31	23 36 27.25	+0.394	-3 54 33.2	+1.72	17 00.3						
32	23 26 53.19	+1.166	-4 46 48.4	+6.77	18 49.0	32	23 36 36.35	+0.365	-3 53 54.2	+1.53	16 56.5						
Day of the Month.					8d.	11th.	19th.	27th.	Day of the Month.					4th.	12th.	20th.	28th.
Semidiameter					17.14	17.48	17.85	18.27	Semidiameter					18.71	19.18	19.68	20.19
Horizontal Parallax					1.60	1.63	1.67	1.71	Horizontal Parallax					1.75	1.79	1.84	1.89

NOTE.—The sign + indicates north declinations; the sign - indicates south declinations.

GREENWICH MEAN TIME.

JULY.						AUGUST.					
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ' "	"	h m		h m s	s	° ' "	"	h m
1	23 36 27.25	+0.394	-3 54 33.2	+1.72	17 00.3	1	23 35 38.86	-0.522	-4 09 50.2	-4.12	14 57.4
2	23 36 36.35	0.365	3 53 54.2	1.53	16 56.5	2	23 35 25.99	0.550	4 11 31.2	4.29	14 53.2
3	23 36 44.76	0.336	3 53 19.7	1.34	16 52.7	3	23 35 12.44	0.578	4 13 16.3	4.46	14 49.1
4	23 36 52.47	0.307	3 52 49.8	1.15	16 48.9	4	23 34 58.24	0.605	4 15 05.5	4.63	14 44.9
5	23 36 59.48	0.277	3 52 24.4	0.96	16 45.1	5	23 34 43.39	0.632	4 16 58.6	4.80	14 40.7
6	23 37 05.79	+0.248	-3 52 03.5	+0.77	16 41.3	6	23 34 27.90	-0.659	-4 18 55.5	-4.96	14 36.5
7	23 37 11.40	0.219	3 51 47.2	0.58	16 37.4	7	23 34 11.77	0.685	4 20 56.4	5.12	14 32.3
8	23 37 16.30	0.189	3 51 35.5	0.39	16 33.6	8	23 33 55.01	0.711	4 23 01.1	5.27	14 28.1
9	23 37 20.49	0.160	3 51 28.4	0.20	16 29.7	9	23 33 37.64	0.736	4 25 09.4	5.42	14 23.9
10	23 37 23.98	0.130	3 51 25.9	+0.01	16 25.8	10	23 33 19.67	0.761	4 27 21.4	5.57	14 19.6
11	23 37 26.75	+0.100	-3 51 28.0	-0.18	16 21.9	11	23 33 01.11	-0.786	-4 29 37.0	-5.72	14 15.4
12	23 37 28.80	0.071	3 51 34.7	0.37	16 18.0	12	23 32 41.95	0.810	4 31 56.1	5.86	14 11.1
13	23 37 30.14	0.041	3 51 46.0	0.56	16 14.1	13	23 32 22.21	0.834	4 34 18.5	6.00	14 06.9
14	23 37 30.76	+0.011	3 52 01.9	0.76	16 10.2	14	23 32 01.90	0.857	4 36 44.2	6.14	14 02.6
15	23 37 30.65	-0.019	3 52 22.5	0.95	16 06.2	15	23 31 41.04	0.880	4 39 13.3	6.28	13 58.3
16	23 37 29.82	-0.049	-3 52 47.7	-1.14	16 02.3	16	23 31 19.63	-0.903	-4 41 45.6	-6.41	13 54.0
17	23 37 28.27	0.079	3 53 17.5	1.34	15 58.3	17	23 30 57.69	0.925	4 44 20.8	6.53	13 49.7
18	23 37 26.01	0.110	3 53 52.0	1.53	15 54.3	18	23 30 35.24	0.946	4 46 58.9	6.65	13 45.4
19	23 37 23.01	0.140	3 54 31.1	1.72	15 50.3	19	23 30 12.29	0.967	4 49 39.9	6.77	13 41.1
20	23 37 19.29	0.170	3 55 14.8	1.92	15 46.3	20	23 29 48.84	0.987	4 52 23.7	6.88	13 36.8
21	23 37 14.84	-0.201	-3 56 03.1	-2.11	15 42.3	21	23 29 24.92	-1.006	-4 55 10.0	-6.98	13 32.5
22	23 37 09.67	0.231	3 56 56.0	2.30	15 38.3	22	23 29 00.55	1.024	4 57 58.8	7.08	13 28.1
23	23 37 03.77	0.261	3 57 53.5	2.49	15 34.2	23	23 28 35.76	1.042	5 00 50.0	7.18	13 23.8
24	23 36 57.16	0.291	3 58 55.5	2.68	15 30.2	24	23 28 10.54	1.059	5 03 43.5	7.27	13 19.4
25	23 36 49.83	0.321	4 00 02.0	2.87	15 26.1	25	23 27 44.91	1.076	5 06 39.0	7.35	13 15.1
26	23 36 41.79	-0.350	-4 01 12.9	-3.05	15 22.0	26	23 27 18.90	-1.092	-5 09 36.5	-7.43	13 10.7
27	23 36 33.04	0.379	4 02 28.3	3.23	15 17.9	27	23 26 52.53	1.107	5 12 35.9	7.51	13 06.4
28	23 36 23.59	0.408	4 03 48.1	3.41	15 13.8	28	23 26 25.82	1.120	5 15 37.1	7.58	13 02.0
29	23 36 13.44	0.437	4 05 12.2	3.59	15 09.7	29	23 25 58.79	1.133	5 18 39.7	7.64	12 57.6
30	23 36 02.59	0.466	4 06 40.6	3.77	15 05.6	30	23 25 31.45	1.145	5 21 43.7	7.70	12 53.2
31	23 35 51.06	-0.494	-4 08 13.3	-3.95	15 01.5	31	23 25 03.83	-1.156	-5 24 49.2	-7.75	12 48.8
32	23 35 38.86	-0.522	-4 09 50.2	-4.12	14 57.4	32	23 24 35.95	-1.166	-5 27 55.9	-7.80	12 44.4

Day of the Month.	6th.	14th.	22d.	30th.	Day of the Month.	7th.	15th.	23th.	31st.
Semidiameter	20.72	21.25	21.77	22.26	Semidiameter	22.72	23.10	23.41	23.62
Horizontal Parallax	1.94	1.99	2.04	2.08	Horizontal Parallax	2.12	2.16	2.19	2.21

The sign + prefixed to the hourly change of declination indicates that north declinations are increasing or south declinations are decreasing. The sign - indicates that north declinations are decreasing or south declinations increasing.

GREENWICH MEAN TIME.

SEPTEMBER.						OCTOBER.						
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.	
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.		
	h m s	s	" ' "	"	h m		h m s	s	" ' "	"	h m	
1	23 24 35.95	-1.166	-5 27 55.9	-7.80	12 44.4	1	23 10 21.62	-1.069	-6 58 51.5	-6.49	10 32.2	
2	23 24 07.82	1.176	5 31 03.5	7.84	12 40.0	2	23 09 56.16	1.052	7 01 25.9	6.36	10 27.9	
3	23 23 39.47	1.185	5 34 12.0	7.87	12 35.6	3	23 09 31.13	1.034	7 03 57.1	6.23	10 23.5	
4	23 23 10.92	1.193	5 37 21.4	7.90	12 31.2	4	23 09 06.53	1.016	7 06 25.0	6.09	10 19.2	
5	23 22 42.19	1.200	5 40 31.4	7.92	12 26.8	5	23 08 42.38	0.997	7 08 49.6	5.95	10 14.9	
6	23 22 13.30	-1.207	-5 43 41.8	-7.94	12 22.4	6	23 08 18.69	-0.977	-7 11 10.9	-5.81	10 10.6	
7	23 21 44.27	1.213	5 46 52.5	7.95	12 17.9	7	23 07 55.50	0.956	7 13 28.7	5.66	10 06.3	
8	23 21 15.11	1.218	5 50 03.6	7.96	12 13.5	8	23 07 32.80	0.935	7 15 42.9	5.51	10 02.0	
9	23 20 45.85	1.221	5 53 14.7	7.96	12 09.0	9	23 07 10.61	0.914	7 17 53.4	5.36	9 57.7	
10	23 20 16.52	1.224	5 56 25.6	7.95	12 04.6	10	23 06 48.95	0.892	7 20 00.3	5.20	9 53.4	
11	23 19 47.13	-1.226	-5 59 36.4	-7.94	12 00.2	11	23 06 27.84	-0.869	-7 22 03.4	-5.04	9 49.1	
12	23 19 17.70	1.227	6 02 47.0	7.93	11 55.8	12	23 06 07.29	0.844	7 24 02.5	4.88	9 44.8	
13	23 18 48.26	1.227	6 05 57.1	7.91	11 51.4	13	23 05 47.31	0.820	7 25 57.6	4.71	9 40.5	
14	23 18 18.83	1.226	6 09 06.4	7.88	11 47.0	14	23 05 27.90	0.795	7 27 48.7	4.54	9 36.3	
15	23 17 49.42	1.224	6 12 15.0	7.84	11 42.5	15	23 05 09.10	0.770	7 29 35.5	4.37	9 32.0	
16	23 17 20.06	-1.221	-6 15 22.8	-7.80	11 38.1	16	23 04 50.92	-0.744	-7 31 18.2	-4.20	9 27.8	
17	23 16 50.78	1.217	6 18 29.5	7.75	11 33.7	17	23 04 33.37	0.718	7 32 56.7	4.02	9 23.6	
18	23 16 21.60	1.213	6 21 34.8	7.69	11 29.3	18	23 04 16.45	0.691	7 34 31.1	3.84	9 19.4	
19	23 15 52.54	1.207	6 24 38.7	7.63	11 24.9	19	23 04 00.19	0.663	7 36 00.9	3.66	9 15.2	
20	23 15 23.62	1.201	6 27 41.3	7.57	11 20.5	20	23 03 44.59	0.635	7 37 26.2	3.47	9 11.0	
21	23 14 54.88	-1.194	-6 30 42.3	-7.50	11 16.1	21	23 03 29.67	-0.607	-7 38 47.1	-3.28	9 06.8	
22	23 14 26.33	1.186	6 33 41.4	7.42	11 11.7	22	23 03 15.43	0.578	7 40 03.5	3.09	9 02.7	
23	23 13 57.99	1.177	6 36 38.5	7.34	11 07.3	23	23 03 01.90	0.549	7 41 15.2	2.90	8 58.5	
24	23 13 29.88	1.166	6 39 33.7	7.25	11 02.9	24	23 02 49.07	0.520	7 42 22.3	2.70	8 54.4	
25	23 13 02.04	1.154	6 42 26.7	7.16	10 58.5	25	23 02 36.95	0.490	7 43 24.8	2.51	8 50.3	
26	23 12 34.48	-1.142	-6 45 17.3	-7.06	10 54.1	26	23 02 25.53	-0.460	-7 44 22.6	-2.31	8 46.2	
27	23 12 07.22	1.129	6 48 05.5	6.96	10 49.7	27	23 02 14.85	0.430	7 45 15.7	2.11	8 42.1	
28	23 11 40.29	1.115	6 50 51.2	6.85	10 45.3	28	23 02 04.90	0.400	7 46 04.0	1.92	8 38.0	
29	23 11 13.70	1.100	6 53 34.2	6.73	10 40.9	29	23 01 55.69	0.369	7 46 47.6	1.72	8 33.9	
30	23 10 47.47	1.085	6 56 14.3	6.61	10 36.6	30	23 01 47.21	0.338	7 47 26.4	1.52	8 29.8	
31	23 10 21.62	-1.069	-6 58 51.5	-6.49	10 32.2	31	23 01 39.48	-0.307	-7 48 00.4	-1.32	8 25.7	
32	23 09 56.16	-1.052	-7 01 25.9	-6.36	10 27.9	32	23 01 32.50	-0.276	-7 48 29.6	-1.12	8 21.7	
Day of the Month.			8th.	16th.	24th.	Day of the Month.			2d.	10th.	18th.	26th.
Semidiameter			23.72	23.71	23.59	Semidiameter			23.36	23.03	22.63	22.16
Horizontal Parallax			2.22	2.22	2.21	Horizontal Parallax			2.18	2.15	2.12	2.07

NOTE.—The sign + indicates north declinations; the sign - indicates south declinations.

GREENWICH MEAN TIME.

NOVEMBER.						DECEMBER.					
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ' "	"	h m		h m s	s	° ' "	"	h m
1	23 01 32.50	-0.276	7 48 29.6	-1.12	8 21.7	1	23 03 55.04	+0.661	7 26 08.9	+4.74	6 26.3
2	23 01 26.27	0.244	7 48 54.0	0.92	8 17.7	2	23 04 11.25	0.690	7 24 12.8	4.92	6 22.6
3	23 01 20.79	0.213	7 49 13.5	0.72	8 13.7	3	23 04 28.14	0.719	7 22 12.5	5.10	6 19.0
4	23 01 16.07	0.181	7 49 28.3	0.52	8 09.7	4	23 04 45.71	0.747	7 20 08.0	5.28	6 15.3
5	23 01 12.11	0.149	7 49 38.3	0.32	8 05.7	5	23 05 03.97	0.775	7 17 59.3	5.45	6 11.7
6	23 01 08.91	-0.118	7 49 43.5	-0.12	8 01.7	6	23 05 22.90	+0.803	7 15 46.4	+5.63	6 08.1
7	23 01 06.46	0.086	7 49 44.0	+0.08	7 57.7	7	23 05 42.49	0.830	7 13 29.4	5.80	6 04.5
8	23 01 04.78	0.054	7 49 39.5	0.29	7 53.7	8	23 06 02.74	0.857	7 11 08.2	5.97	6 00.9
9	23 01 03.86	-0.023	7 49 30.2	0.49	7 49.8	9	23 06 23.64	0.884	7 08 42.9	6.14	5 57.3
10	23 01 03.70	+0.009	7 49 16.1	0.69	7 45.9	10	23 06 45.19	0.911	7 06 13.6	6.31	5 53.7
11	23 01 04.30	+0.041	7 48 57.2	+0.89	7 42.0	11	23 07 07.38	+0.938	7 03 40.3	+6.47	5 50.2
12	23 01 05.67	0.073	7 48 33.5	1.09	7 38.1	12	23 07 30.21	0.965	7 01 03.0	6.64	5 46.6
13	23 01 07.80	0.105	7 48 05.0	1.29	7 34.2	13	23 07 53.69	0.991	6 58 21.8	6.80	5 43.1
14	23 01 10.70	0.137	7 47 31.7	1.49	7 30.3	14	23 08 17.79	1.017	6 55 36.6	6.96	5 39.5
15	23 01 14.36	0.169	7 46 53.5	1.69	7 26.4	15	23 08 42.50	1.043	6 52 47.6	7.12	5 36.0
16	23 01 18.79	+0.201	7 46 10.6	+1.89	7 22.5	16	23 09 07.82	+1.068	6 49 54.8	+7.28	5 32.5
17	23 01 23.98	0.232	7 45 23.0	2.08	7 18.7	17	23 09 33.75	1.093	6 46 58.2	7.44	5 29.0
18	23 01 29.93	0.264	7 44 30.6	2.28	7 14.9	18	23 10 00.29	1.118	6 43 57.8	7.60	5 25.5
19	23 01 36.64	0.296	7 43 33.5	2.47	7 11.1	19	23 10 27.41	1.142	6 40 53.7	7.75	5 22.0
20	23 01 44.11	0.327	7 42 31.7	2.67	7 07.3	20	23 10 55.11	1.166	6 37 45.9	7.90	5 18.5
21	23 01 52.33	+0.358	7 41 25.2	+2.87	7 03.5	21	23 11 23.40	+1.190	6 34 34.5	+8.05	5 15.1
22	23 02 01.30	0.389	7 40 14.0	3.06	6 59.7	22	23 11 52.26	1.214	6 31 19.6	8.20	5 11.6
23	23 02 11.02	0.420	7 38 58.2	3.25	6 56.0	23	23 12 21.68	1.237	6 28 01.2	8.34	5 08.2
24	23 02 21.48	0.451	7 37 37.8	3.44	6 52.2	24	23 12 51.65	1.260	6 24 39.3	8.49	5 04.8
25	23 02 32.67	0.482	7 36 12.8	3.63	6 48.5	25	23 13 22.17	1.283	6 21 13.8	8.63	5 01.4
26	23 02 44.60	+0.512	7 34 43.3	+3.82	6 44.7	26	23 13 53.23	+1.305	6 17 45.0	+8.77	4 58.0
27	23 02 57.26	0.542	7 33 09.3	4.01	6 41.0	27	23 14 24.81	1.327	6 14 12.9	8.91	4 54.6
28	23 03 10.64	0.572	7 31 30.8	4.20	6 37.3	28	23 14 56.92	1.349	6 10 37.4	9.05	4 51.2
29	23 03 24.73	0.602	7 29 47.9	4.38	6 33.6	29	23 15 29.55	1.370	6 06 58.6	9.18	4 47.8
30	23 03 39.53	0.632	7 28 00.6	4.56	6 29.9	30	23 16 02.67	1.391	6 03 16.7	9.31	4 44.4
31	23 03 55.04	+0.661	7 26 08.9	+4.74	6 26.3	31	23 16 36.28	+1.411	5 59 31.6	+9.44	4 41.1
32	23 04 11.25	+0.690	7 24 12.8	+4.92	6 22.6	32	23 17 10.39	+1.431	5 55 43.4	+9.57	4 37.7

Day of the Month.					Day of the Month.				
	3d.	11th.	19th.	27th.		5th.	13th.	21st.	29th.
Semidiameter	21.65	21.12	20.58	20.04	Semidiameter	19.52	19.02	18.56	18.11
Horizontal Parallax	2.02	1.97	1.92	1.87	Horizontal Parallax	1.82	1.78	1.73	1.70

The sign + prefixed to the hourly change of declination indicates that north declinations are increasing or south declinations are decreasing. The sign - indicates that north declinations are decreasing or south declinations increasing.

GREENWICH MEAN TIME.

JANUARY.						FEBRUARY.					
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ' "	"	h m		h m s	s	° ' "	"	h m
1	19 59 54.90	+1.209	-20 51 54.7	+3.48	1 19.9	1	20 15 13.00	+1.227	-20 07 54.7	+3.72	23 29.8
2	20 00 23.97	1.213	20 50 35.8	3.30	1 16.5	2	20 15 42.40	1.224	20 06 25.2	3.73	23 26.4
3	20 00 53.13	1.217	20 49 16.4	3.34	1 13.0	3	20 16 11.73	1.221	20 04 55.7	3.73	23 22.9
4	20 01 22.37	1.220	20 47 56.4	3.34	1 09.6	4	20 16 41.00	1.218	20 03 26.1	3.73	23 19.5
5	20 01 51.67	1.223	20 46 35.9	3.36	1 06.1	5	20 17 10.19	1.215	20 01 56.5	3.73	23 16.0
6	20 02 21.04	+1.226	-20 45 15.0	+3.38	1 02.7	6	20 17 39.29	+1.211	-20 00 26.9	+3.74	23 12.6
7	20 02 50.48	1.228	20 43 53.6	3.40	0 59.2	7	20 18 08.30	1.207	19 58 57.2	3.74	23 09.1
8	20 03 19.98	1.230	20 42 31.7	3.42	0 55.8	8	20 18 37.23	1.203	19 57 27.5	3.74	23 05.7
9	20 03 49.52	1.232	20 41 09.3	3.44	0 52.3	9	20 19 06.06	1.199	19 55 57.9	3.74	23 02.2
10	20 04 19.11	1.234	20 39 46.4	3.46	0 48.9	10	20 19 34.79	1.195	19 54 28.3	3.73	22 58.7
11	20 04 48.75	+1.236	-20 38 23.0	+3.48	0 45.4	11	20 20 03.41	+1.190	-19 52 58.7	+3.73	22 55.2
12	20 05 18.43	1.237	20 36 59.2	3.50	0 42.0	12	20 20 31.93	1.186	19 51 29.2	3.73	22 51.8
13	20 05 48.14	1.238	20 35 35.0	3.52	0 38.5	13	20 21 00.34	1.181	19 49 59.8	3.72	22 48.3
14	20 06 17.88	1.239	20 34 10.4	3.54	0 35.1	14	20 21 28.63	1.176	19 48 30.6	3.72	22 44.9
15	20 06 47.64	1.240	20 32 45.5	3.56	0 31.7	15	20 21 56.80	1.171	19 47 01.5	3.71	22 41.4
16	20 07 17.43	+1.241	-20 31 20.2	+3.58	0 28.3	16	20 22 24.84	+1.166	-19 45 32.5	+3.71	22 38.0
17	20 07 47.23	1.242	20 29 54.5	3.59	0 24.8	17	20 22 52.76	1.161	19 44 03.6	3.70	22 34.5
18	20 08 17.05	1.242	20 28 28.4	3.60	0 21.4	18	20 23 20.54	1.155	19 42 35.0	3.69	22 31.0
19	20 08 46.87	1.243	20 27 01.9	3.62	0 17.9	19	20 23 48.18	1.149	19 41 06.6	3.68	22 27.5
20	20 09 16.70	1.243	20 25 35.2	3.63	0 14.5	20	20 24 15.69	1.143	19 39 38.4	3.67	22 24.1
21	20 09 46.52	+1.242	-20 24 08.1	+3.64	0 11.1	21	20 24 43.05	+1.137	-19 38 10.4	+3.66	22 20.6
22	20 10 16.33	1.242	20 22 40.7	3.65	0 07.6	22	20 25 10.25	1.131	19 36 42.7	3.65	22 17.1
23	20 10 46.13	1.241	20 21 13.0	3.66	0 04.2	23	20 25 37.30	1.124	19 35 15.2	3.64	22 13.6
24	20 11 15.92	1.240	20 19 45.1	3.67	0 00.8 28 31.3	24	20 26 04.19	1.117	19 33 48.0	3.63	22 10.1
25	20 11 45.68	1.239	20 18 17.0	3.68	23 53.9	25	20 26 30.91	1.110	19 32 21.3	3.61	22 06.6
26	20 12 15.42	+1.238	-20 16 48.6	+3.69	23 50.4	26	20 26 57.46	+1.103	-19 30 55.0	+3.59	22 03.1
27	20 12 45.13	1.237	20 15 20.0	3.69	23 47.0	27	20 27 23.83	1.096	19 29 29.1	3.57	21 59.6
28	20 13 14.80	1.235	20 13 51.2	3.70	23 43.6	28	20 27 50.03	1.088	19 28 03.5	3.56	21 56.1
29	20 13 44.42	1.233	20 12 22.3	3.70	23 40.1	29	20 28 16.04	1.080	19 26 38.4	3.54	21 52.6
30	20 14 14.00	1.231	20 10 53.2	3.71	23 36.7	30	20 28 41.86	1.072	19 25 13.7	3.52	21 49.1
31	20 14 43.53	+1.229	-20 09 24.0	+3.71	23 33.3	31	20 29 07.48	+1.064	-19 23 49.5	+3.50	21 45.6
32	20 15 13.00	+1.227	-20 07 54.7	+3.72	23 29.8	32	20 29 32.91	+1.056	-19 22 25.8	+3.48	21 42.1

Day of the Month.	7th.	15th.	23d.	31st.	Day of the Month.	8th.	16th.	24th.
Semidiameter	7.13	7.12	7.11	7.13	Semidiameter	7.15	7.18	7.23
Horizontal Parallax	0.80	0.80	0.80	0.80	Horizontal Parallax	0.80	0.81	0.81

NOTE.—The sign + indicates north declinations; the sign — indicates south declinations.

GREENWICH MEAN TIME.

MARCH.						APRIL.					
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ' "	"	h m		h m s	s	° ' "	"	h m
1	20 28 16.04	+1.080	-19 26 38.4	+3.34	21 52.6	1	20 39 48.79	+0.757	-18 47 59.4	+2.56	20 02.1
2	20 28 41.86	1.072	19 25 13.7	3.52	21 49.1	2	20 40 06.80	0.744	18 46 58.5	2.51	19 58.5
3	20 29 07.48	1.064	19 23 49.5	3.50	21 45.6	3	20 40 24.49	0.731	18 45 58.7	2.47	19 54.9
4	20 29 32.91	1.056	19 22 25.8	3.48	21 42.1	4	20 40 41.86	0.718	18 45 00.1	2.42	19 51.2
5	20 29 58.14	1.047	19 21 02.6	3.46	21 38.6	5	20 40 58.91	0.705	18 44 02.6	2.37	19 47.6
6	20 30 23.16	+1.038	-19 19 39.9	+3.44	21 35.1	6	20 41 15.65	+0.691	-18 43 06.2	+2.32	19 43.9
7	20 30 47.97	1.029	19 18 17.7	3.41	21 31.5	7	20 41 32.06	0.677	18 42 11.0	2.27	19 40.2
8	20 31 12.56	1.020	19 16 56.1	3.39	21 28.0	8	20 41 48.14	0.663	18 41 17.0	2.22	19 36.5
9	20 31 36.93	1.011	19 15 35.1	3.36	21 24.5	9	20 42 03.89	0.649	18 40 24.1	2.17	19 32.9
10	20 32 01.08	1.002	19 14 14.7	3.34	21 21.0	10	20 42 19.31	0.635	18 39 32.5	2.12	19 29.2
11	20 32 25.01	+0.993	-19 12 54.9	+3.31	21 17.4	11	20 42 34.39	+0.621	-18 38 42.1	+2.07	19 25.5
12	20 32 48.71	0.983	19 11 35.7	3.29	21 13.9	12	20 42 49.14	0.607	18 37 52.9	2.02	19 21.8
13	20 33 12.18	0.973	19 10 17.2	3.26	21 10.3	13	20 43 03.55	0.593	18 37 04.9	1.97	19 18.1
14	20 33 35.41	0.963	19 08 59.4	3.23	21 06.8	14	20 43 17.61	0.579	18 36 18.2	1.92	19 14.4
15	20 33 58.40	0.953	19 07 42.3	3.20	21 03.2	15	20 43 31.33	0.565	18 35 32.8	1.87	19 10.7
16	20 34 21.15	+0.943	-19 06 25.9	+3.17	20 59.7	16	20 43 44.70	+0.550	-18 34 48.7	+1.81	19 07.0
17	20 34 43.65	0.933	19 05 10.2	3.14	20 56.1	17	20 43 57.72	0.535	18 34 06.0	1.75	19 03.3
18	20 35 05.90	0.922	19 03 55.3	3.10	20 52.5	18	20 44 10.39	0.520	18 33 24.5	1.70	18 59.5
19	20 35 27.89	0.911	19 02 41.2	3.07	20 48.9	19	20 44 22.70	0.505	18 32 44.4	1.65	18 55.8
20	20 35 49.63	0.900	19 01 28.0	3.04	20 45.4	20	20 44 34.65	0.490	18 32 05.7	1.59	18 52.0
21	20 36 11.10	+0.889	-19 00 15.5	+3.00	20 41.8	21	20 44 46.23	+0.475	-18 31 28.5	+1.53	18 48.3
22	20 36 32.30	0.878	18 59 03.9	2.97	20 38.2	22	20 44 57.45	0.460	18 30 52.6	1.47	18 44.5
23	20 36 53.24	0.867	18 57 53.2	2.93	20 34.6	23	20 45 08.30	0.445	18 30 18.1	1.41	18 40.8
24	20 37 13.91	0.855	18 56 43.4	2.89	20 31.0	24	20 45 18.78	0.430	18 29 45.0	1.35	18 37.0
25	20 37 34.29	0.843	18 55 34.4	2.85	20 27.4	25	20 45 28.89	0.414	18 29 13.4	1.29	18 33.3
26	20 37 54.38	+0.831	-18 54 26.4	+2.81	20 23.8	26	20 45 38.62	+0.398	-18 28 43.2	+1.23	18 29.5
27	20 38 14.19	0.819	18 53 19.4	2.77	20 20.2	27	20 45 47.97	0.382	18 28 14.5	1.16	18 25.8
28	20 38 33.71	0.807	18 52 13.4	2.73	20 16.6	28	20 45 56.94	0.366	18 27 47.3	1.10	18 22.0
29	20 38 52.93	0.795	18 51 08.4	2.69	20 13.0	29	20 46 05.53	0.350	18 27 21.5	1.04	18 18.2
30	20 39 11.85	0.783	18 50 04.4	2.65	20 09.4	30	20 46 13.74	0.334	18 26 57.2	0.98	18 14.4
31	20 39 30.47	+0.770	-18 49 01.4	+2.61	20 05.7	31	20 46 21.56	+0.318	-18 26 34.5	+0.92	18 10.5
32	20 39 48.79	+0.757	-18 47 59.4	+2.56	20 02.1	32	20 46 28.99	+0.302	-18 26 13.3	+0.85	18 06.7
Day of the Month.	4th.	12th.	20th.	28th.		Day of the Month.	5th.	13th.	21st.	29th.	
Semidiameter	"	"	"	"		Semidiameter	"	"	"	"	
Horizontal Parallax . .	7.27	7.33	7.40	7.48		Horizontal Parallax . .	7.57	7.66	7.75	7.85	
	0.82	0.82	0.83	0.84			0.85	0.86	0.87	0.88	

The sign + prefixed to the hourly change of declination indicates that north declinations are increasing or south declinations are decreasing. The sign - indicates that north declinations are decreasing or south declinations increasing.

GREENWICH MEAN TIME.

MAY.						JUNE.					
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ' "	"	h m		h m s	s	° ' "	"	h m
1	20 46 21.56	+0.318	18 26 34.5	+0.92	18 10.5	1	20 47 09.13	-0.190	18 27 35.8	-1.08	16 09.3
2	20 46 28.99	0.302	18 26 13.3	0.85	18 06.7	2	20 47 04.38	0.206	18 28 02.4	1.14	16 05.3
3	20 46 36.03	0.286	18 25 53.6	0.79	18 02.9	3	20 46 59.25	0.222	18 28 30.5	1.20	16 01.2
4	20 46 42.68	0.270	18 25 35.4	0.73	17 59.1	4	20 46 53.74	0.238	18 29 00.0	1.26	15 57.2
5	20 46 48.94	0.253	18 25 18.7	0.66	17 55.2	5	20 46 47.86	0.253	18 29 31.0	1.32	15 53.2
6	20 46 54.82	+0.237	18 25 03.5	+0.60	17 51.4	6	20 46 41.61	-0.268	18 30 03.4	-1.38	15 49.1
7	20 47 00.31	0.220	18 24 49.9	0.53	17 47.5	7	20 46 35.00	0.283	18 30 37.2	1.44	15 45.1
8	20 47 05.40	0.204	18 24 37.9	0.47	17 43.7	8	20 46 28.02	0.298	18 31 12.4	1.50	15 41.0
9	20 47 10.10	0.188	18 24 27.4	0.41	17 39.8	9	20 46 20.68	0.313	18 31 49.0	1.56	15 37.0
10	20 47 14.41	0.171	18 24 18.4	0.34	17 36.0	10	20 46 12.98	0.328	18 32 26.9	1.61	15 32.9
11	20 47 18.33	+0.155	18 24 10.9	+0.28	17 32.1	11	20 46 04.93	-0.343	18 33 06.2	-1.66	15 28.8
12	20 47 21.85	0.138	18 24 05.0	0.21	17 28.2	12	20 45 56.52	0.358	18 33 46.8	1.72	15 24.8
13	20 47 24.98	0.122	18 24 00.7	0.15	17 24.3	13	20 45 47.76	0.373	18 34 28.7	1.77	15 20.7
14	20 47 27.71	0.106	18 23 57.9	0.09	17 20.4	14	20 45 38.66	0.387	18 35 11.9	1.83	15 16.6
15	20 47 30.05	0.089	18 23 56.7	+0.02	17 16.5	15	20 45 29.22	0.401	18 35 56.4	1.88	15 12.5
16	20 47 31.99	+0.073	18 23 57.1	-0.04	17 12.6	16	20 45 19.44	-0.415	18 36 42.1	-1.93	15 08.4
17	20 47 33.53	0.056	18 23 59.1	0.11	17 08.7	17	20 45 09.32	0.429	18 37 29.1	1.98	15 04.3
18	20 47 34.68	0.040	18 24 02.6	0.17	17 04.8	18	20 44 58.88	0.443	18 38 17.3	2.03	15 00.2
19	20 47 35.43	0.023	18 24 07.7	0.24	17 00.9	19	20 44 48.12	0.456	18 39 06.6	2.08	14 56.1
20	20 47 35.78	+0.007	18 24 14.4	0.31	16 56.9	20	20 44 37.03	0.469	18 39 57.1	2.13	14 52.0
21	20 47 35.73	-0.010	18 24 22.6	-0.37	16 53.0	21	20 44 25.62	-0.482	18 40 48.8	-2.18	14 47.8
22	20 47 35.29	0.027	18 24 32.4	0.44	16 49.1	22	20 44 13.90	0.495	18 41 41.6	2.23	14 43.7
23	20 47 34.45	0.043	18 24 43.8	0.50	16 45.1	23	20 44 01.88	0.508	18 42 35.5	2.27	14 39.6
24	20 47 33.21	0.060	18 24 56.8	0.57	16 41.2	24	20 43 49.55	0.520	18 43 30.5	2.31	14 35.4
25	20 47 31.57	0.076	18 25 11.3	0.63	16 37.2	25	20 43 36.93	0.532	18 44 26.4	2.35	14 31.3
26	20 47 29.54	-0.093	18 25 27.3	-0.70	16 33.2	26	20 43 24.03	-0.544	18 45 23.3	-2.39	14 27.2
27	20 47 27.11	0.109	18 25 44.9	0.76	16 29.2	27	20 43 10.84	0.555	18 46 21.2	2.43	14 23.0
28	20 47 24.29	0.126	18 26 04.0	0.82	16 25.3	28	20 42 57.37	0.566	18 47 20.2	2.47	14 18.8
29	20 47 21.08	0.142	18 26 24.7	0.89	16 21.3	29	20 42 43.64	0.577	18 48 20.0	2.51	14 14.7
30	20 47 17.48	0.158	18 26 46.9	0.95	16 17.3	30	20 42 29.65	0.588	18 49 20.6	2.55	14 10.5
31	20 47 13.50	-0.174	18 27 10.6	-1.02	16 13.3	31	20 42 15.41	-0.599	18 50 22.1	-2.58	14 06.4
32	20 47 09.13	-0.190	18 27 35.8	-1.08	16 09.3	32	20 42 00.92	-0.609	18 51 24.4	-2.61	14 02.2
Day of the Month.		7th.	15th.	23d.	31st.	Day of the Month.		8th.	16th.	24th.	
Semidiameter		7.96	8.07	8.18	8.28	Semidiameter		8.38	8.47	8.55	
Horizontal Parallax		0.90	0.91	0.92	0.93	Horizontal Parallax		0.94	0.95	0.96	

NOTE.—The sign + indicates north declinations; the sign — indicates south declinations.

GREENWICH MEAN TIME.

JULY.						AUGUST.					
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ' "	"	h m		h m s	s	° ' "	"	h m
1	20 42 15.41	-0.599	-18 50 22.1	-2.58	14 06.4	1	20 33 29.33	-0.758	-19 26 06.6	-2.95	11 55.7
2	20 42 00.92	0.609	18 51 24.4	2.61	14 02.2	2	20 33 11.14	0.757	19 27 17.3	2.94	11 51.5
3	20 41 46.19	0.619	18 52 27.5	2.64	13 58.0	3	20 32 52.96	0.756	19 28 27.7	2.93	11 47.2
4	20 41 31.23	0.628	18 53 31.3	2.67	13 53.8	4	20 32 34.82	0.755	19 29 37.8	2.92	11 43.0
5	20 41 16.04	0.637	18 54 35.8	2.70	13 49.6	5	20 32 16.73	0.753	19 30 47.5	2.90	11 38.8
6	20 41 00.63	-0.646	-18 55 41.1	-2.73	13 45.4	6	20 31 58.69	-0.751	-19 31 56.8	-2.88	11 34.5
7	20 40 45.02	0.654	18 56 47.0	2.76	13 41.3	7	20 31 40.70	0.748	19 33 05.8	2.86	11 30.3
8	20 40 29.20	0.662	18 57 53.5	2.79	13 37.1	8	20 31 22.78	0.745	19 34 14.3	2.84	11 26.1
9	20 40 13.18	0.670	18 59 00.6	2.81	13 32.9	9	20 31 04.94	0.742	19 35 22.3	2.82	11 21.8
10	20 39 56.97	0.678	19 00 08.2	2.83	13 28.7	10	20 30 47.19	0.738	19 36 29.8	2.80	11 17.6
11	20 39 40.58	-0.686	-19 01 16.4	-2.85	13 24.5	11	20 30 29.53	-0.734	-19 37 36.8	-2.78	11 13.4
12	20 39 24.03	0.693	19 02 25.0	2.87	13 20.3	12	20 30 11.98	0.729	19 38 43.2	2.76	11 09.2
13	20 39 07.31	0.700	19 03 34.1	2.89	13 16.0	13	20 29 54.55	0.724	19 39 49.0	2.73	11 05.0
14	20 38 50.42	0.706	19 04 43.6	2.91	13 11.8	14	20 29 37.24	0.719	19 40 54.1	2.70	11 00.7
15	20 38 33.38	0.712	19 05 53.5	2.93	13 07.6	15	20 29 20.06	0.713	19 41 58.6	2.67	10 56.5
16	20 38 16.21	-0.718	-19 07 03.8	-2.94	13 03.4	16	20 29 03.01	-0.707	-19 43 02.4	-2.64	10 52.3
17	20 37 58.91	0.724	19 08 14.4	2.95	12 59.2	17	20 28 46.13	0.700	19 44 05.5	2.61	10 48.1
18	20 37 41.47	0.729	19 09 25.3	2.96	12 55.0	18	20 28 29.40	0.693	19 45 07.8	2.58	10 43.9
19	20 37 23.92	0.734	19 10 36.4	2.97	12 50.7	19	20 28 12.83	0.686	19 46 09.4	2.55	10 39.7
20	20 37 06.26	0.738	19 11 47.7	2.98	12 46.5	20	20 27 56.44	0.679	19 47 10.2	2.52	10 35.5
21	20 36 48.50	-0.742	-19 12 59.2	-2.99	12 42.3	21	20 27 40.24	-0.671	-19 48 10.1	-2.49	10 31.3
22	20 36 30.65	0.745	19 14 11.0	2.99	12 38.0	22	20 27 24.23	0.663	19 49 09.1	2.45	10 27.1
23	20 36 12.71	0.748	19 15 22.8	2.99	12 33.8	23	20 27 08.42	0.654	19 50 07.3	2.41	10 22.9
24	20 35 54.71	0.751	19 16 34.6	2.99	12 29.6	24	20 26 52.82	0.645	19 51 04.5	2.37	10 18.7
25	20 35 36.65	0.754	19 17 46.4	2.99	12 25.3	25	20 26 37.45	0.636	19 52 00.8	2.33	10 14.5
26	20 35 18.53	-0.756	-19 18 58.2	-2.99	12 21.1	26	20 26 22.30	-0.626	-19 52 56.2	-2.29	10 10.4
27	20 35 00.37	0.757	19 20 10.0	2.98	12 16.9	27	20 26 07.39	0.616	19 53 50.7	2.25	10 06.2
28	20 34 42.18	0.757	19 21 21.6	2.98	12 12.6	28	20 25 52.72	0.606	19 54 44.1	2.21	10 02.0
29	20 34 23.98	0.758	19 22 33.1	2.97	12 08.4	29	20 25 38.31	0.595	19 55 36.5	2.17	9 57.8
30	20 34 05.76	0.759	19 23 44.5	2.97	12 04.2	30	20 25 24.16	0.584	19 56 27.9	2.12	9 53.7
31	20 33 47.54	-0.759	-19 24 55.7	-2.96	11 59.9	31	20 25 10.27	-0.573	-19 57 18.2	-2.08	9 49.5
32	20 33 29.33	-0.758	-19 26 06.6	-2.95	11 55.7	32	20 24 56.65	-0.562	-19 58 07.5	-2.03	9 45.4
Day of the Month.						Day of the Month.					
Semidiameter						Semidiameter					
Horizontal Parallax						Horizontal Parallax					
						</					

GREENWICH MEAN TIME.											
SEPTEMBER.						OCTOBER.					
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ' "	"	h m		h m s	s	° ' "	"	h m
1	20 24 56.65	-0.562	-19 58 07.5	-2.03	9 45.4	1	20 20 42.44	-0.116	-20 13 15.3	-0.43	7 43.3
2	20 24 43.32	0.550	19 58 55.6	1.99	9 41.2	2	20 20 39.84	0.099	20 13 24.8	0.37	7 39.3
3	20 24 30.27	0.538	19 59 42.6	1.94	9 37.1	3	20 20 37.65	0.082	20 13 33.0	0.31	7 35.3
4	20 24 17.51	0.526	20 00 28.5	1.89	9 32.9	4	20 20 35.87	0.065	20 13 39.8	0.25	7 31.4
5	20 24 05.05	0.513	20 01 13.2	1.84	9 28.8	5	20 20 34.51	0.048	20 13 45.2	0.19	7 27.4
6	20 23 52.89	-0.500	-20 01 56.8	-1.79	9 24.7	6	20 20 33.56	-0.031	-20 13 49.2	-0.13	7 23.5
7	20 23 41.04	0.487	20 02 39.3	1.74	9 20.5	7	20 20 33.02	-0.014	20 13 51.8	0.07	7 19.5
8	20 23 29.50	0.474	20 03 20.6	1.69	9 16.4	8	20 20 32.89	+0.004	20 13 53.0	-0.01	7 15.6
9	20 23 18.28	0.461	20 04 00.6	1.64	9 12.3	9	20 20 33.18	0.021	20 13 52.8	+0.04	7 11.7
10	20 23 07.39	0.447	20 04 39.4	1.59	9 08.2	10	20 20 33.89	0.038	20 13 51.2	0.10	7 07.7
11	20 22 56.83	-0.433	-20 05 17.0	-1.54	9 04.1	11	20 20 35.00	+0.056	-20 13 48.2	+0.16	7 03.8
12	20 22 46.60	0.419	20 05 53.5	1.49	9 00.0	12	20 20 36.53	0.073	20 13 43.8	0.22	6 59.9
13	20 22 36.71	0.405	20 06 28.7	1.44	8 55.9	13	20 20 38.48	0.091	20 13 38.0	0.28	6 56.0
14	20 22 27.17	0.390	20 07 02.6	1.39	8 51.8	14	20 20 40.86	0.108	20 13 30.7	0.33	6 52.1
15	20 22 17.99	0.375	20 07 35.2	1.34	8 47.7	15	20 20 43.65	0.125	20 13 22.1	0.39	6 48.2
16	20 22 09.16	-0.360	-20 08 06.5	-1.29	8 43.6	16	20 20 46.86	+0.143	-20 13 12.1	+0.45	6 44.4
17	20 22 00.69	0.345	20 08 36.5	1.23	8 39.6	17	20 20 50.48	0.160	20 13 00.6	0.51	6 40.5
18	20 21 52.59	0.330	20 09 05.2	1.18	8 35.5	18	20 20 54.52	0.178	20 12 47.7	0.57	6 36.6
19	20 21 44.86	0.314	20 09 32.6	1.12	8 31.5	19	20 20 58.98	0.195	20 12 33.4	0.62	6 32.8
20	20 21 37.50	0.298	20 09 58.6	1.07	8 27.4	20	20 21 03.86	0.212	20 12 17.7	0.68	6 28.9
21	20 21 30.52	-0.282	-20 10 23.3	-1.01	8 23.4	21	20 21 09.15	+0.229	-20 12 00.6	+0.74	6 25.1
22	20 21 23.93	0.266	20 10 46.6	0.95	8 19.3	22	20 21 14.86	0.247	20 11 42.1	0.80	6 21.3
23	20 21 17.73	0.250	20 11 08.6	0.89	8 15.3	23	20 21 20.98	0.264	20 11 22.2	0.86	6 17.4
24	20 21 11.92	0.234	20 11 29.3	0.83	8 11.3	24	20 21 27.51	0.281	20 11 00.9	0.92	6 13.6
25	20 21 06.51	0.218	20 11 48.6	0.78	8 07.2	25	20 21 34.46	0.298	20 10 38.2	0.98	6 09.8
26	20 21 01.50	-0.201	-20 12 06.5	-0.72	8 03.2	26	20 21 41.82	+0.315	-20 10 14.1	+1.04	6 06.0
27	20 20 56.88	0.184	20 12 23.0	0.67	7 59.2	27	20 21 49.58	0.332	20 09 48.7	1.09	6 02.2
28	20 20 52.66	0.167	20 12 38.1	0.61	7 55.2	28	20 21 57.74	0.349	20 09 21.9	1.15	5 58.4
29	20 20 48.85	0.150	20 12 51.9	0.55	7 51.2	29	20 22 06.31	0.365	20 08 53.7	1.20	5 54.6
30	20 20 45.44	0.133	20 13 04.3	0.49	7 47.2	30	20 22 15.28	0.382	20 08 24.1	1.26	5 50.8
31	20 20 42.44	-0.116	-20 13 15.3	-0.43	7 43.3	31	20 22 24.64	+0.399	-20 07 53.1	+1.32	5 47.0
32	20 20 39.84	-0.099	-20 13 24.8	-0.37	7 39.3	32	20 22 34.39	+0.415	-20 07 20.8	+1.37	5 43.3
Day of the Month.						Day of the Month.					
4th.						6th.					
12th.						14th.					
20th.						22d.					
28th.						30th.					
Semidiameter						Semidiameter					
Horizontal Parallax						Horizontal Parallax					
8.55 8.47 8.38 8.28						8.18 8.07 7.96 7.86					
0.96 0.95 0.94 0.93						0.92 0.91 0.90 0.88					
NOTE.—The sign + indicates north declinations; the sign — indicates south declinations.											

GREENWICH MEAN TIME.

NOVEMBER.						DECEMBER.											
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.						
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.							
	h m s	s	° ' "	"	h m		h m s	s	° ' "	"	h m						
1	20 22 34.39	+0.415	20 07 20.8	+1.37	5 43.3	1	20 30 16.12	+0.845	19 41 10.7	+2.95	3 53.0						
2	20 22 44.54	0.431	20 06 47.2	1.43	5 39.5	2	20 30 36.57	0.857	19 39 59.5	3.00	3 49.4						
3	20 22 55.08	0.447	20 06 12.3	1.48	5 35.8	3	20 30 57.30	0.869	19 38 47.2	3.04	3 45.8						
4	20 23 06.00	0.463	20 05 36.0	1.54	5 32.0	4	20 31 18.30	0.881	19 37 33.7	3.09	3 42.2						
5	20 23 17.30	0.479	20 04 58.4	1.60	5 28.3	5	20 31 39.58	0.893	19 36 19.1	3.13	3 38.7						
6	20 23 28.99	+0.495	20 04 19.5	+1.65	5 24.5	6	20 32 01.12	+0.904	19 35 03.5	+3.18	3 35.1						
7	20 23 41.06	0.511	20 03 39.2	1.71	5 20.8	7	20 32 22.92	0.915	19 33 46.8	3.22	3 31.5						
8	20 23 53.50	0.526	20 02 57.6	1.76	5 17.1	8	20 32 44.99	0.926	19 32 29.0	3.26	3 27.9						
9	20 24 06.31	0.542	20 02 14.7	1.82	5 13.4	9	20 33 07.32	0.936	19 31 10.1	3.31	3 24.4						
10	20 24 19.49	0.557	20 01 30.5	1.88	5 09.7	10	20 33 29.90	0.946	19 29 50.1	3.35	3 20.8						
11	20 24 33.05	+0.572	20 00 44.9	+1.93	5 06.0	11	20 33 52.72	+0.956	19 28 29.1	+3.40	3 17.3						
12	20 24 46.97	0.587	19 59 58.1	1.98	5 02.3	12	20 34 15.79	0.966	19 27 07.1	3.44	3 13.7						
13	20 25 01.25	0.602	19 59 10.0	2.03	4 58.6	13	20 34 39.10	0.976	19 25 44.0	3.48	3 10.2						
14	20 25 15.89	0.617	19 58 20.6	2.09	4 54.9	14	20 35 02.65	0.986	19 24 19.9	3.53	3 06.6						
15	20 25 30.88	0.632	19 57 29.9	2.14	4 51.2	15	20 35 26.42	0.996	19 22 54.8	3.57	3 03.1						
16	20 25 46.23	+0.647	19 56 37.9	+2.20	4 47.5	16	20 35 50.42	+1.005	19 21 28.7	+3.61	2 59.6						
17	20 26 01.92	0.662	19 55 44.7	2.25	4 43.8	17	20 36 14.64	1.014	19 20 01.7	3.65	2 56.1						
18	20 26 17.96	0.676	19 54 50.2	2.30	4 40.1	18	20 36 39.08	1.023	19 18 33.7	3.69	2 52.6						
19	20 26 34.35	0.690	19 53 54.4	2.35	4 36.5	19	20 37 03.73	1.032	19 17 04.7	3.73	2 49.0						
20	20 26 51.08	0.704	19 52 57.4	2.40	4 32.8	20	20 37 28.58	1.040	19 15 34.8	3.77	2 45.5						
21	20 27 08.14	+0.718	19 51 59.2	+2.45	4 29.2	21	20 37 53.64	+1.048	19 14 03.9	+3.81	2 42.0						
22	20 27 25.52	0.732	19 50 59.7	2.50	4 25.5	22	20 38 18.90	1.056	19 12 32.1	3.85	2 38.4						
23	20 27 43.23	0.745	19 49 59.0	2.55	4 21.9	23	20 38 44.34	1.064	19 10 59.5	3.88	2 34.9						
24	20 28 01.27	0.758	19 48 57.1	2.60	4 18.2	24	20 39 09.96	1.072	19 09 26.0	3.92	2 31.4						
25	20 28 19.62	0.771	19 47 54.0	2.65	4 14.6	25	20 39 35.77	1.079	19 07 51.6	3.95	2 27.9						
26	20 28 38.28	+0.784	19 46 49.7	+2.70	4 11.0	26	20 40 01.76	+1.086	19 06 16.3	+3.99	2 24.4						
27	20 28 57.25	0.797	19 45 44.3	2.75	4 07.4	27	20 40 27.91	1.093	19 04 40.2	4.02	2 20.9						
28	20 29 16.53	0.809	19 44 37.7	2.80	4 03.8	28	20 40 54.22	1.100	19 03 03.3	4.05	2 17.4						
29	20 29 36.10	0.821	19 43 29.9	2.85	4 00.2	29	20 41 20.70	1.107	19 01 25.6	4.09	2 13.9						
30	20 29 55.96	0.833	19 42 20.9	2.90	3 56.6	30	20 41 47.34	1.113	18 59 47.1	4.12	2 10.4						
31	20 30 16.12	+0.845	19 41 10.7	+2.95	3 53.0	31	20 42 14.12	+1.119	18 58 07.8	+4.16	2 06.9						
32	20 30 36.57	+0.857	19 39 59.5	+3.00	3 49.4	32	20 42 41.04	+1.125	18 56 27.7	+4.19	2 03.4						
Day of the Month.					7th.	15th.	28d.	Day of the Month.					1st.	9th.	17th.	25th.	31d.
Semidiameter					"	"	"	Semidiameter					"	"	"	"	"
Horizontal Parallax					7.76	7.66	7.57	Horizontal Parallax					7.48	7.41	7.34	7.28	7.24
					0.87	0.86	0.85						0.84	0.83	0.83	0.82	0.81

The sign + prefixed to the hourly change of declination indicates that north declinations are increasing or south declinations are decreasing. The sign — indicates that north declinations are decreasing or south declinations increasing.

GREENWICH MEAN TIME.

Month and Day.	Apparent Right Ascension.	Var. of R. A. for 1 Day.	Apparent Declination.	Var. of Decl. for 1 Day.	Meridian Passage.	Month and Day.	Apparent Right Ascension.	Var. of R. A. for 1 Day.	Apparent Declination.	Var. of Decl. for 1 Day.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ' "	"	h m		h m s	s	° ' "	"	h m
Jan. 3	17 28 06.38	+15.214	-23 21 05.6	-12.23	22 36.9	July 2	17 29 23.62	-10.084	-23 24 29.0	+6.91	10 50.1
7	17 29 06.67	14.923	23 21 53.4	11.67	22 22.2	6	17 28 43.91	9.761	23 24 01.4	6.86	10 33.7
11	17 30 05.69	14.579	23 22 39.0	11.11	22 07.4	10	17 28 05.61	9.380	23 23 34.2	6.75	10 17.4
15	17 31 03.24	14.189	23 23 22.3	10.52	21 52.6	14	17 27 28.95	8.940	23 23 07.5	6.57	10 01.1
19	17 31 59.14	13.753	23 24 03.2	9.94	21 37.8	18	17 26 54.17	8.441	23 22 41.7	6.32	9 44.8
23	17 32 53.20	+13.268	-23 24 41.8	-9.35	21 23.0	22	17 26 21.50	-7.884	-23 22 17.0	+6.02	9 28.5
27	17 33 45.22	12.733	23 25 18.0	8.76	21 08.1	26	17 25 51.17	7.271	23 21 53.6	5.65	9 12.3
31	17 34 35.00	12.150	23 25 51.9	8.19	20 53.2	30	17 25 23.40	6.608	23 21 31.9	5.20	8 56.1
Feb. 4	17 35 22.36	11.521	23 26 23.5	7.61	20 38.2	Aug. 3	17 24 58.36	5.906	23 21 12.1	4.71	8 40.0
8	17 36 07.12	10.855	23 26 52.8	7.05	20 23.2	7	17 24 36.20	5.168	23 20 54.3	4.16	8 23.9
12	17 36 49.15	+10.154	-23 27 19.9	-6.49	20 08.2	11	17 24 17.06	-4.397	-23 20 38.9	+3.55	8 07.8
16	17 37 28.31	9.420	23 27 44.7	5.94	19 53.1	15	17 24 01.06	3.598	23 20 26.0	2.92	7 51.8
20	17 38 04.46	8.649	23 28 07.4	5.41	19 38.0	19	17 23 48.31	2.769	23 20 15.6	2.25	7 35.9
24	17 38 37.46	7.846	23 28 28.0	4.91	19 22.8	23	17 23 38.94	1.913	23 20 08.1	1.51	7 20.0
28	17 39 07.19	7.013	23 28 46.7	4.42	19 07.5	27	17 23 33.03	1.039	23 20 03.5	0.77	7 04.2
Mar. 4	17 39 33.53	+6.153	-23 29 03.4	-3.94	18 52.2	31	17 23 30.64	-0.157	-23 20 01.9	+0.01	6 48.4
8	17 39 56.39	5.277	23 29 18.2	3.47	18 36.9	Sept. 4	17 23 31.78	+0.731	23 20 03.4	-0.75	6 32.7
12	17 40 15.73	4.389	23 29 31.2	3.01	18 21.5	8	17 23 36.49	1.623	23 20 07.9	1.50	6 17.1
16	17 40 31.49	3.489	23 29 42.3	2.56	18 06.0	12	17 23 44.76	2.513	23 20 15.4	2.26	6 01.5
20	17 40 43.63	2.580	23 29 51.7	2.13	17 50.5	16	17 23 56.59	3.402	23 20 26.0	3.01	5 46.0
24	17 40 52.12	+1.663	-23 29 59.4	-1.71	17 34.9	20	17 24 11.97	+4.287	-23 20 39.5	-3.74	5 30.5
28	17 40 56.93	+0.742	23 30 05.4	1.30	17 19.2	24	17 24 30.87	5.162	23 20 55.9	4.45	5 15.1
Apr. 1	17 40 58.06	-0.175	23 30 09.8	0.88	17 03.4	28	17 24 53.24	6.019	23 21 15.1	5.12	4 59.7
5	17 40 55.55	1.078	23 30 12.5	0.46	16 47.7	Oct. 2	17 25 18.99	6.853	23 21 36.9	5.76	4 44.4
9	17 40 49.46	1.963	23 30 13.5	-0.04	16 31.8	6	17 25 48.03	7.663	23 22 01.2	6.36	4 29.2
13	17 40 39.87	-2.827	-23 30 12.8	+0.37	16 16.0	10	17 26 20.26	+8.450	-23 22 27.7	-6.90	4 14.0
17	17 40 26.87	3.671	23 30 10.5	0.79	16 00.0	14	17 26 55.60	9.213	23 22 56.3	7.35	3 58.9
21	17 40 10.53	4.493	23 30 06.5	1.20	15 44.0	18	17 27 33.93	9.948	23 23 26.7	7.82	3 43.8
25	17 39 50.97	5.281	23 30 00.9	1.62	15 27.9	22	17 28 15.14	10.650	23 23 58.8	8.21	3 28.7
29	17 39 28.33	6.032	23 29 53.5	2.06	15 11.8	26	17 28 59.08	11.313	23 24 32.3	8.53	3 13.7
May 3	17 39 02.78	-6.736	-23 29 44.4	+2.49	14 55.7	30	17 29 45.59	+11.936	-23 25 07.0	-8.80	2 58.8
7	17 38 34.51	7.391	23 29 33.6	2.92	14 39.5	Nov. 3	17 30 34.51	12.516	23 25 42.6	9.00	2 43.9
11	17 38 03.72	7.995	23 29 21.0	3.36	14 23.2	7	17 31 25.66	13.055	23 26 18.9	9.14	2 29.0
15	17 37 30.62	8.547	23 29 06.7	3.79	14 06.9	11	17 32 18.89	13.555	23 26 55.6	9.20	2 14.2
19	17 36 55.42	9.045	23 28 50.7	4.20	13 50.6	15	17 33 14.04	14.013	23 27 32.4	9.21	1 59.4
23	17 36 18.34	-9.485	-23 28 33.1	+4.60	13 34.3	19	17 34 10.93	+14.423	-23 28 09.2	-9.17	1 44.6
27	17 35 39.63	9.859	23 28 13.9	4.99	13 17.9	23	17 35 09.36	14.783	23 28 45.7	9.08	1 29.8
31	17 34 59.56	10.163	23 27 53.2	5.35	13 01.5	27	17 36 09.12	15.087	23 29 21.8	8.95	1 15.1
June 4	17 34 18.42	10.395	23 27 31.1	5.71	12 45.1	Dec. 1	17 37 09.99	15.341	23 29 57.2	8.74	1 00.4
8	17 33 36.49	10.559	23 27 07.6	6.02	12 28.7	5	17 38 11.78	15.546	23 30 31.7	8.51	0 45.7
12	17 32 54.04	-10.655	-23 26 43.0	+6.27	12 12.2	9	17 39 14.29	+15.702	-23 31 05.2	-8.22	0 31.0
16	17 32 11.34	10.685	23 26 17.5	6.49	11 55.8	13	17 40 17.33	15.809	23 31 37.4	7.91	0 16.3
20	17 31 28.65	10.644	23 25 51.2	6.69	11 39.4	17	17 41 20.69	15.861	23 32 08.4	7.58	0 01.0
24	17 30 46.28	10.530	23 25 24.1	6.84	11 22.9	21	17 42 24.14	15.854	23 32 38.0	7.22	23 43.2
28	17 30 04.50	10.345	23 24 56.6	6.90	11 06.5	25	17 43 27.45	15.793	23 33 06.1	6.83	23 28.6
July 2	17 29 23.62	-10.084	-23 24 29.0	+6.91	10 50.1	29	17 44 30.41	+15.677	-23 33 32.6	-6.41	23 13.9
6	17 28 43.91	-9.761	-23 24 01.4	+6.86	10 33.7	33	17 45 32.80	+15.510	-23 33 57.4	-6.00	22 59.2

Greatest semidiameter,
Least semidiameter.

June 15, 1.84"
December 19, 1.66"

Greatest horizontal parallax,
Least horizontal parallax.

June 15, 0.49"
December 19, 0.43"

GREENWICH MEAN TIME.

Month and Day.	Apparent Right Ascension.	Var. of R. A. for 1 Day.	Apparent Declination.	Var. of Decl. for 1 Day.	Meridian Passage.	Month and Day.	Apparent Right Ascension.	Var. of R. A. for 1 Day.	Apparent Declination.	Var. of Decl. for 1 Day.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ' "	"	h m		h m s	s	° ' "	"	h m
Jan. 3	6 08 51.30	-7.224	+22 17 33.3	+2.51	11 19.2	July 2	6 15 47.40	+9.623	+22 21 25.5	-3.32	23 34.7
7	6 08 22.66	7.086	22 17 43.5	2.57	11 03.0	6	6 16 25.77	9.555	22 21 11.7	3.57	23 19.6
11	6 07 54.66	6.901	22 17 53.9	2.62	10 46.8	10	6 17 03.80	9.455	22 20 56.9	3.81	23 04.5
15	6 07 27.49	6.674	22 18 04.5	2.67	10 30.6	14	6 17 41.37	9.325	22 20 41.2	4.04	22 49.4
19	6 07 01.30	6.408	22 18 15.3	2.72	10 14.5	18	6 18 18.36	9.165	22 20 24.6	4.22	22 34.3
23	6 06 36.27	-6.097	+22 18 26.2	+2.76	9 58.3	22	6 18 54.65	+8.973	+22 20 07.4	-4.39	22 19.1
27	6 06 12.56	5.749	22 18 37.4	2.80	9 42.2	26	6 19 30.10	8.747	22 19 49.5	4.52	22 04.0
31	6 05 50.33	5.357	22 18 48.6	2.82	9 26.1	30	6 20 04.58	8.488	22 19 31.2	4.64	21 48.8
Feb. 4	6 05 29.75	4.930	22 18 59.9	2.84	9 10.1	Aug. 3	6 20 37.97	8.202	22 19 12.4	4.72	21 33.6
8	6 05 10.93	4.474	22 19 11.3	2.86	8 54.0	7	6 21 10.16	7.888	22 18 53.4	4.77	21 18.4
12	6 04 53.08	-3.994	+22 19 22.8	+2.87	8 38.0	11	6 21 41.04	+7.548	+22 18 34.2	-4.81	21 03.2
16	6 04 39.00	3.489	22 19 34.3	2.89	8 22.1	15	6 22 10.51	7.182	22 18 14.9	4.81	20 47.9
20	6 04 26.10	2.959	22 19 45.9	2.90	8 06.1	19	6 22 38.46	6.788	22 17 55.7	4.76	20 32.6
24	6 04 15.35	2.413	22 19 57.5	2.89	7 50.2	23	6 23 04.78	6.367	22 17 36.8	4.69	20 17.3
28	6 04 06.82	1.850	22 20 09.0	2.87	7 34.3	27	6 23 29.36	5.918	22 17 18.2	4.59	20 02.0
Mar. 4	6 04 00.57	-1.274	+22 20 20.5	+2.86	7 18.5	31	6 23 52.10	+5.449	+22 17 00.1	-4.45	19 46.6
8	6 03 56.64	0.689	22 20 31.9	2.84	7 02.7	Sept. 4	6 24 12.93	4.963	22 16 42.6	4.27	19 31.3
12	6 03 55.07	-0.098	22 20 43.2	2.80	6 47.0	8	6 24 31.78	4.459	22 16 25.9	4.07	19 15.9
16	6 03 55.85	+0.489	22 20 54.3	2.75	6 31.3	12	6 24 48.58	3.938	22 16 10.0	3.86	19 00.5
20	6 03 58.98	1.076	22 21 05.2	2.69	6 15.6	16	6 25 03.26	3.398	22 15 55.0	3.60	18 45.0
24	6 04 04.46	+1.664	+22 21 15.8	+2.61	5 59.9	20	6 25 15.74	+2.843	+22 15 41.2	-3.31	18 29.5
28	6 04 12.29	2.246	22 21 26.1	2.52	5 44.3	24	6 25 25.99	2.276	22 15 28.5	3.01	18 13.9
Apr. 1	6 04 22.42	2.819	22 21 36.0	2.41	5 28.8	28	6 25 33.94	1.701	22 15 17.1	2.69	17 58.3
5	6 04 34.83	3.382	22 21 45.4	2.30	5 13.3	Oct. 2	6 25 39.59	1.121	22 15 07.0	2.35	17 42.7
9	6 04 49.45	3.925	22 21 54.4	2.17	4 57.8	6	6 25 42.91	+0.540	22 14 58.3	2.00	17 27.0
13	6 05 06.21	+4.453	+22 22 02.8	+2.02	4 42.3	10	6 25 43.91	-0.041	+22 14 51.0	-1.62	17 11.3
17	6 05 25.05	4.964	22 22 10.6	1.85	4 26.9	14	6 25 42.58	0.624	22 14 45.3	1.24	16 55.5
21	6 05 45.90	5.457	22 22 17.6	1.65	4 11.5	18	6 25 38.92	1.207	22 14 41.1	0.85	16 39.7
25	6 06 08.68	5.930	22 22 23.8	1.45	3 56.2	22	6 25 32.94	1.778	22 14 38.5	0.45	16 23.9
29	6 06 33.31	6.381	22 22 29.2	1.24	3 40.9	26	6 25 24.71	2.336	22 14 37.5	-0.06	16 08.0
May 3	6 06 59.69	+6.805	+22 22 33.7	+1.01	3 25.6	30	6 25 14.27	-2.881	+22 14 38.0	+0.32	15 52.1
7	6 07 27.71	7.200	22 22 37.3	0.76	3 10.3	Nov. 3	6 25 01.69	3.408	22 14 40.1	0.71	15 36.2
11	6 07 57.25	7.567	22 22 39.8	0.49	2 55.1	7	6 24 47.05	3.910	22 14 43.7	1.08	15 20.2
15	6 08 28.21	7.909	22 22 41.2	+0.21	2 39.9	11	6 24 30.44	4.393	22 14 48.7	1.44	15 04.2
19	6 09 00.49	8.226	22 22 41.5	-0.07	2 24.7	15	6 24 11.94	4.853	22 14 55.2	1.79	14 48.1
23	6 09 33.98	+8.513	+22 22 40.6	-0.36	2 09.5	19	6 23 51.66	-5.281	+22 15 03.0	+2.10	14 32.1
27	6 10 08.55	8.768	22 22 38.6	0.65	1 54.4	23	6 23 29.74	5.674	22 15 12.0	2.41	14 16.0
31	6 10 44.08	8.992	22 22 35.4	0.96	1 39.3	27	6 23 06.32	6.029	22 15 22.3	2.70	13 59.8
June 4	6 11 20.44	9.180	22 22 30.9	1.26	1 24.2	Dec. 1	6 22 41.56	6.345	22 15 33.6	2.96	13 43.7
8	6 11 57.48	9.337	22 22 25.2	1.59	1 09.0	5	6 22 15.61	6.622	22 15 46.0	3.20	13 27.5
12	6 12 35.10	+9.467	+22 22 18.2	-1.90	0 53.9	9	6 21 48.64	-6.854	+22 15 59.2	+3.41	13 11.3
16	6 13 13.17	9.564	22 22 10.0	2.20	0 38.8	13	6 21 20.83	7.048	22 16 13.3	3.61	12 55.2
20	6 13 51.57	9.631	22 22 00.6	2.50	0 23.7	17	6 20 52.31	7.201	22 16 28.1	3.76	12 39.0
24	6 14 30.17	9.663	22 21 50.0	2.79	0 08.6	21	6 20 23.29	7.299	22 16 43.4	3.89	12 22.8
28	6 15 08.83	9.659	22 21 38.3	3.06	23 49.7	25	6 19 53.99	7.344	22 16 59.2	3.99	12 06.5
July 2	6 15 47.40	+9.623	+22 21 25.5	-3.32	23 34.7	29	6 19 24.60	-7.342	+22 17 15.3	+4.07	11 50.3
6	6 16 25.77	+9.555	+22 21 11.7	-3.57	23 19.6	33	6 18 55.32		+22 17 31.8		11 34.1

Least semidiameter,
Greatest semidiameter,

June 26, 1.24"
December 27, 1.33"

Least horizontal parallax,
Greatest horizontal parallax,

June 26, 0.29"
December 27, 0.31"

MERCURY.											
GREENWICH MEAN NOON.											
Date.	Heliocentric Longitude, Mean Equinox of Date.	Daily Motion.	Reduction to Orbit.	Heliocentric Latitude.	Daily Motion.	Logarithm of Radius Vector.	Logarithm of Distance from Earth—				
							At Date.	At Intermediate Date.			
Jan.	1	320 46 58.2	+ 3 39 45.3	- 1 36.5	- 6 59 21.3	+ 1 40.2	9.608 8401	0.119 2351	0.116 9409		
	2	324 29 36.9	3 45 35.8	3 14.3	6 56 47.6	3 28.5	9.603 1034	0.114 5656	0.112 1072		
	3	328 18 17.2	3 51 48.5	4 51.3	6 52 21.6	5 24.9	9.597 1376	0.109 5634	0.106 9317		
	4	332 13 21.4	3 58 23.6	6 25.8	6 45 55.0	7 29.7	9.590 9572	0.104 2099	0.101 3958		
	5	336 15 11.9	4 05 21.3	7 55.6	6 37 19.4	9 43.0	9.584 5794	0.098 4866	0.095 4798		
	6	340 24 11.3	+ 4 12 41.3	- 9 18.2	- 6 26 26.1	+ 12 05.0	9.578 0266	0.092 3727	0.089 1628		
	7	344 40 41.7	4 20 23.1	10 31.2	6 13 06.5	14 35.7	9.571 3242	0.085 8473	0.082 4237		
	8	349 05 04.4	4 28 25.7	11 31.8	5 57 12.1	17 14.3	9.564 5040	0.078 8884	0.075 2399		
	9	353 37 39.5	4 36 47.5	12 17.3	5 38 35.5	20 00.2	9.557 6032	0.071 4749	0.067 5908		
	10	358 18 45.0	4 45 26.2	12 44.8	5 17 09.8	22 52.1	9.550 6657	0.063 5849	0.059 4548		
	11	3 08 36.5	+ 4 54 18.8	- 12 51.9	- 4 52 50.0	+ 25 48.0	9.543 7415	0.055 1980	0.050 8122		
	12	8 07 25.9	5 03 21.4	12 36.3	4 25 33.2	28 45.8	9.536 8889	0.046 2952	0.041 6455		
	13	13 15 21.0	5 12 29.2	11 56.3	3 55 19.0	31 42.1	9.530 1728	0.036 8612	0.031 9411		
	14	18 32 23.8	5 21 35.7	10 51.1	3 22 10.8	34 33.0	9.523 6652	0.026 8842	0.021 6901		
	15	23 58 29.8	5 30 34.2	9 20.8	2 46 16.3	37 14.0	9.517 4447	0.016 3588	0.010 8910		
	16	29 33 26.8	+ 5 39 16.4	- 7 27.1	- 2 07 47.9	+ 39 39.8	9.511 5948	0.005 2878	9.999 5513		
	17	35 16 53.9	5 47 32.7	5 12.7	1 27 03.6	41 44.8	9.506 2028	9.993 6843	9.987 6905		
	18	41 08 20.3	5 55 13.3	2 42.3	0 44 27.2	43 23.0	9.501 3561	9.987 5747	9.975 3425		
	19	47 07 04.9	6 02 07.4	- 0 01.7	- 0 00 28.3	44 28.8	9.497 1407	9.969 0011	9.962 5587		
	20	53 12 16.0	6 08 04.5	+ 2 41.7	+ 0 44 18.1	44 57.3	9.493 6365	9.956 0251	9.949 4111		
	21	59 22 51.5	+ 6 12 54.4	+ 5 20.1	+ 1 29 12.6	+ 44 44.5	9.490 9142	9.942 7295	9.935 9943		
	22	65 37 39.6	6 16 28.1	7 45.0	2 13 32.6	43 48.1	9.489 0314	9.929 2214	9.922 4283		
	23	71 55 20.1	6 18 38.2	9 48.5	2 56 34.2	42 07.8	9.488 0293	9.915 6341	9.908 8593		
	24	78 14 26.8	6 19 19.7	11 23.8	3 37 34.2	39 45.3	9.487 9303	9.902 1259	9.895 4578		
	25	84 33 29.5	6 18 30.2	12 25.8	4 15 52.1	36 44.1	9.488 7368	9.888 8800	9.882 4182		
	26	90 50 57.4	+ 6 16 10.3	+ 12 51.6	+ 4 50 52.4	+ 33 11.2	9.490 4306	9.876 0997	9.869 9525		
	27	97 05 21.6	6 12 23.8	12 40.5	5 22 05.9	29 12.2	9.492 9743	9.864 0042	9.858 2827		
	28	103 15 18.5	6 07 16.9	11 54.3	5 49 10.8	24 55.4	9.496 3136	9.852 8156	9.847 6300		
	29	109 19 31.7	6 00 58.1	10 36.7	6 11 53.3	20 28.6	9.500 3806	9.842 7518	9.838 2056		
	30	115 16 54.5	5 53 38.0	8 53.1	6 30 07.3	15 59.7	9.505 0970	9.834 0133	9.830 1944		
	31	121 06 30.9	+ 5 45 27.4	+ 6 49.6	+ 6 43 54.2	+ 11 35.4	9.510 3777	9.826 7663	9.823 7431		
Feb.	1	126 47 36.5	5 36 38.4	4 33.0	6 53 21.3	7 21.0	9.516 1353	9.821 1356	9.818 9516		
	2	132 19 38.5	5 27 22.1	+ 2 09.8	6 58 41.0	+ 3 21.2	9.522 2824	9.817 1948	9.815 8658		
	3	137 42 15.0	5 17 49.2	- 0 14.0	7 00 09.5	- 0 21.0	9.528 7343	9.814 9616	9.814 4759		
	4	142 55 14.3	5 08 09.0	2 33.1	6 58 05.5	3 43.7	9.535 4114	9.814 3994	9.814 7201		
	5	147 58 33.2	+ 4 58 29.9	- 4 43.1	+ 6 52 48.9	- 6 46.1	9.542 2401	9.815 4235	9.816 4928		
	6	152 52 16.6	4 48 58.9	6 40.7	6 44 40.2	9 27.9	9.549 1538	9.817 9096	9.819 6543		
	7	157 36 35.3	4 39 41.4	8 23.7	6 33 59.6	11 50.0	9.556 0931	9.821 7059	9.824 0432		
	8	162 11 45.2	4 30 41.8	9 50.4	6 21 06.4	13 53.3	9.563 0059	9.826 6444	9.829 4878		
	9	166 38 05.6	4 22 03.2	11 00.0	6 06 18.9	15 38.9	9.569 8472	9.832 5519	9.835 8146		
	10	170 55 59.4	+ 4 13 48.1	- 11 52.5	+ 5 49 53.9	- 17 08.4	9.576 5781	9.839 2567	9.842 8582		
	11	175 05 50.3	4 05 57.8	12 28.1	5 32 06.8	18 23.5	9.583 1662	9.846 6004	9.850 4656		
	12	179 08 03.6	3 58 33.2	12 47.6	5 13 11.2	19 25.6	9.589 5841	9.854 4366	9.858 4975		
	13	183 03 05.3	3 51 34.5	12 52.0	4 53 19.4	20 16.1	9.595 8090	9.862 6340	9.866 8330		
	14	186 51 21.2	3 45 01.6	12 42.5	4 32 42.4	20 56.4	9.601 8230	9.871 0817	9.875 3686		
	15	190 33 16.9	+ 3 38 54.0	- 12 20.3	+ 4 11 29.5	- 21 27.9	9.607 6109	9.879 6831	9.884 0159		
	16	194 09 17.5	+ 3 33 11.3	- 11 46.9	+ 3 49 49.3	- 21 51.4	9.613 1607	9.888 3582	9.892 7022		

MERCURY.

GREENWICH MEAN NOON.

Date.	Heliocentric Longitude, Mean Equinox of Date.	Daily Motion.	Reduction to Orbit.	Heliocentric Latitude.	Daily Motion.	Logarithm of Radius Vector.	Logarithm of Distance from Earth—	
							At Date.	At Intermediate Date.
Feb. 15	190 33 16.9	+ 3 38 54.0	- 12 20.3	+ 4 11 29.5	- 21 27.9	9.607 6109	9.879 6831	9.884 0159
16	194 09 17.5	3 33 11.3	11 46.9	3 49 49.3	21 51.4	9.613 1607	9.888 3582	9.892 7022
17	197 39 47.5	3 27 52.6	11 03.5	3 27 48.9	22 08.2	9.618 4633	9.897 0410	9.901 3684
18	201 05 10.4	3 22 57.0	10 11.5	3 05 34.6	22 19.3	9.623 5115	9.905 6787	9.909 9669
19	204 25 48.8	3 18 23.5	9 12.3	2 43 11.9	22 25.3	9.628 3001	9.914 2283	9.918 4591
20	207 42 04.4	+ 3 14 11.2	- 8 07.0	+ 2 20 45.4	- 22 27.0	9.632 8254	9.922 6559	9.926 8157
21	210 54 18.0	3 10 19.3	6 56.9	1 58 19.2	22 24.9	9.637 0846	9.930 9362	9.935 0152
22	214 02 49.4	3 06 46.8	5 43.0	1 35 56.7	22 19.6	9.641 0762	9.939 0506	9.943 0405
23	217 07 57.7	3 03 32.8	4 26.3	1 13 41.0	22 11.4	9.644 7992	9.946 9840	9.950 8802
24	220 10 00.9	3 00 36.4	3 07.9	0 51 34.7	22 00.8	9.648 2534	9.954 7283	9.958 5271
25	223 09 16.2	+ 2 57 56.9	- 1 48.6	+ 0 29 40.1	- 21 48.2	9.651 4390	9.962 2763	9.965 9753
26	226 06 00.2	2 55 33.8	- 0 29.3	+ 0 07 59.0	21 33.7	9.654 3563	9.969 6242	9.973 2229
27	229 00 28.9	2 53 26.1	+ 0 49.3	- 0 13 26.7	21 17.5	9.657 0066	9.976 7715	9.980 2697
28	231 52 57.3	2 51 33.3	2 06.6	0 34 35.6	21 00.0	9.659 3902	9.983 7180	9.987 1166
Mar. 1	234 43 40.3	2 49 55.1	3 21.8	0 55 26.3	20 41.1	9.661 5086	9.990 4660	9.993 7663
2	237 32 52.1	+ 2 48 30.8	+ 4 34.3	- 1 15 57.5	- 20 21.1	9.663 3623	9.997 0181	0.000 2219
3	240 20 46.1	2 47 19.8	5 43.6	1 36 08.1	19 59.9	9.664 9527	0.003 3781	0.006 4873
4	243 07 36.2	2 46 22.1	6 49.2	1 55 57.0	19 37.7	9.666 2805	0.009 5500	0.012 5668
5	245 53 34.9	2 45 37.4	7 50.6	2 15 23.1	19 14.4	9.667 3467	0.015 5383	0.018 4650
6	248 38 55.2	2 45 05.3	8 47.4	2 34 25.4	18 50.0	9.668 1514	0.021 3475	0.024 1865
7	251 23 49.6	+ 2 44 45.6	+ 9 39.2	- 2 53 02.8	- 18 24.7	9.668 6962	0.026 9826	0.029 7363
8	254 08 30.5	2 44 38.2	10 25.5	3 11 14.4	17 58.2	9.668 9805	0.032 4482	0.035 1189
9	256 53 10.0	2 44 42.9	11 06.0	3 28 58.8	17 30.5	9.669 0049	0.037 7489	0.040 3388
10	259 38 00.5	2 45 00.1	11 40.5	3 46 15.1	17 01.8	9.668 7692	0.042 8892	0.045 4006
11	262 23 14.2	2 45 29.3	12 08.5	4 03 01.9	16 31.6	9.668 2734	0.047 8736	0.050 3084
12	265 09 03.2	+ 2 46 10.8	+ 12 29.8	- 4 19 17.9	- 16 00.1	9.667 5171	0.052 7059	0.055 0663
13	267 55 39.9	2 47 04.8	12 44.2	4 35 01.6	15 27.0	9.666 4998	0.057 3897	0.059 6773
14	270 43 17.0	2 48 11.4	12 51.4	4 50 11.3	14 52.2	9.665 2209	0.061 9287	0.064 1445
15	273 32 06.9	2 49 30.7	12 51.3	5 04 45.4	14 15.6	9.663 6796	0.066 3253	0.068 4711
16	276 22 22.7	2 51 03.1	12 43.6	5 18 41.8	13 36.9	9.661 8749	0.070 5824	0.072 6594
17	279 14 17.6	+ 2 52 48.9	+ 12 28.3	- 5 31 58.4	- 12 55.9	9.659 8061	0.074 7022	0.076 7111
18	282 08 05.2	2 54 48.6	12 05.2	5 44 32.8	12 12.5	9.657 4720	0.078 6862	0.080 6278
19	285 03 59.5	2 57 02.4	11 34.3	5 56 22.4	11 26.2	9.654 8716	0.082 5360	0.084 4109
20	288 02 14.9	2 59 30.9	10 55.7	6 07 24.3	10 37.1	9.652 0046	0.086 2523	0.088 0605
21	291 03 06.3	3 02 14.6	10 09.3	6 17 35.4	9 44.5	9.648 8699	0.089 8353	0.091 5767
22	294 06 49.3	+ 3 05 14.0	+ 9 15.4	- 6 26 52.0	- 8 48.2	9.645 4660	0.093 2846	0.094 9587
23	297 13 39.8	3 08 29.8	8 14.1	6 35 10.5	7 47.9	9.641 7925	0.096 5991	0.098 2057
24	300 23 54.6	3 12 02.6	7 05.7	6 42 26.4	6 43.1	9.637 8512	0.099 7781	0.101 3159
25	303 37 51.0	3 15 53.2	5 50.7	6 48 35.2	5 33.6	9.633 6421	0.102 8187	0.104 2863
26	306 55 47.1	3 20 02.1	4 29.6	6 53 31.8	4 18.7	9.629 1665	0.105 7181	0.107 1138
27	310 18 01.6	+ 3 24 30.0	+ 3 03.1	- 6 57 10.6	- 2 58.0	9.624 4269	0.108 4727	0.109 7941
28	313 44 53.8	3 29 17.9	+ 1 32.0	6 59 25.7	- 1 31.1	9.619 4268	0.111 0775	0.112 3225
29	317 16 44.2	3 34 26.2	- 0 02.5	7 00 10.6	+ 0 02.5	9.614 1712	0.113 5279	0.114 6928
30	320 53 53.3	3 39 55.7	1 39.5	6 59 18.2	1 43.5	9.608 6670	0.115 8164	0.116 8978
31	324 36 42.8	3 45 46.9	3 17.3	6 56 41.1	3 32.0	9.602 9227	0.117 9359	0.118 9296
Apr. 1	328 25 34.4	+ 3 52 00.2	- 4 54.3	- 6 52 11.5	+ 5 28.5	9.596 9499	0.119 8776	0.120 7789
2	332 20 50.7	+ 3 58 36.1	- 6 28.7	- 6 45 41.2	+ 7 33.6	9.590 7628	0.121 6319	0.122 4353

MERCURY.								
GREENWICH MEAN NOON.								
Date.	Heliocentric Longitude, Mean Equinox of Date.	Daily Motion.	Reduction to Orbit.	Heliocentric Latitude.	Daily Motion.	Logarithm of Radius Vector.	Logarithm of Distance from Earth—	
							At Date.	At Intermediate Date.
Apr. 1	328 25 34.4	+ 3 52 00.2	- 4 54.3	- 6 52 11.5	+ 5 28.5	9.596 9499	0.119 8776	0.120 7789
2	332 20 50.7	3 58 36.1	6 28.7	6 45 41.2	7 33.6	9.590 7628	0.121 6319	0.122 4353
3	336 22 54.1	4 05 34.4	7 58.2	6 37 01.5	9 47.3	9.584 3794	0.123 1874	0.123 8868
4	340 32 07.0	4 12 55.1	9 20.6	6 26 03.8	12 09.6	9.577 8212	0.124 5316	0.125 1202
5	344 48 51.6	4 20 37.7	10 33.2	6 12 39.5	14 40.4	9.571 1146	0.125 6507	0.126 1211
6	349 13 29.2	+ 4 28 40.8	- 11 33.4	- 5 56 40.4	+ 17 19.3	9.564 2913	0.126 5292	0.126 8731
7	353 46 19.6	4 37 05.1	12 18.4	5 37 58.6	20 05.4	9.557 3887	0.127 1503	0.127 3585
8	358 27 41.1	4 45 42.4	12 45.4	5 16 27.7	22 57.3	9.550 4506	0.127 4956	0.127 5589
9	3 17 48.9	4 54 35.3	12 51.8	4 52 02.5	25 53.6	9.543 5277	0.127 5454	0.127 4531
10	8 16 55.0	5 03 38.2	12 35.4	4 24 40.1	28 51.3	9.536 6782	0.127 2789	0.127 0202
11	13 25 06.9	+ 5 12 45.9	- 11 54.7	- 3 54 20.5	+ 31 47.4	9.529 9673	0.126 6739	0.126 2371
12	18 42 26.5	5 21 52.5	10 48.7	3 21 07.2	34 38.2	9.523 4674	0.125 7070	0.125 0808
13	24 08 49.1	5 30 50.6	9 17.7	2 45 07.7	37 18.8	9.517 2570	0.124 3554	0.123 5280
14	29 44 02.2	5 39 31.9	7 23.2	2 06 34.8	39 44.1	9.511 4200	0.122 5957	0.121 5558
15	35 27 44.5	5 47 47.4	5 08.3	1 25 46.7	41 48.2	9.506 0434	0.120 4055	0.119 1419
16	41 19 25.0	+ 5 55 26.7	- 2 37.5	- 0 43 07.3	+ 43 25.6	9.501 2150	0.117 7629	0.116 2658
17	47 18 22.4	6 02 19.4	+ 0 03.3	+ 0 00 53.6	44 30.3	9.497 0204	0.114 6488	0.112 9096
18	53 23 44.6	6 08 14.6	2 46.7	0 45 40.9	44 57.5	9.493 5394	0.111 0466	0.109 0580
19	59 34 29.0	6 13 02.2	5 24.8	1 30 35.6	44 43.4	9.490 8422	0.106 9429	0.104 7000
20	65 49 23.6	6 16 33.6	7 49.1	2 14 53.3	43 45.7	9.488 9862	0.102 3290	0.099 8292
21	72 07 08.2	+ 6 18 41.1	+ 9 51.9	+ 2 57 51.8	+ 42 04.0	9.488 0118	0.097 2009	0.094 4437
22	78 26 16.1	6 19 19.7	11 26.2	3 38 47.4	39 40.3	9.487 9408	0.091 5588	0.088 5467
23	84 45 17.3	6 18 27.4	12 27.2	4 16 59.8	36 38.4	9.488 7748	0.085 4090	0.082 1468
24	91 02 40.9	6 16 04.9	12 51.8	4 51 53.5	33 04.2	9.490 4952	0.078 7624	0.075 2574
25	97 16 58.3	6 12 15.8	12 39.6	5 22 59.7	29 04.5	9.493 0640	0.071 6345	0.067 8961
26	103 26 45.8	+ 6 07 06.5	+ 11 52.3	+ 5 49 56.7	+ 24 47.2	9.496 4268	0.064 0452	0.060 0845
27	109 30 47.4	6 00 45.6	10 33.9	6 12 30.9	20 20.3	9.500 5148	0.056 0175	0.051 8476
28	115 27 56.7	5 53 23.7	8 49.6	6 30 36.7	15 51.6	9.505 2495	0.047 5783	0.043 2127
29	121 17 18.1	5 45 11.8	6 45.6	6 44 15.5	11 27.3	9.510 5461	0.038 7548	0.034 2083
30	126 58 07.6	5 36 21.7	4 28.7	6 53 34.7	7 13.4	9.516 3169	0.029 5770	0.024 8648
May 1	132 29 52.6	+ 5 27 04.7	+ 2 05.3	+ 6 58 47.1	+ 3 14.1	9.522 4745	0.020 0754	0.015 2127
2	137 52 11.5	5 17 31.3	- 0 18.4	7 00 08.8	- 0 27.4	9.528 9346	0.010 2805	0.005 2825
3	143 04 52.9	5 07 51.1	2 37.2	6 57 58.5	3 49.6	9.535 6173	0.000 2226	9.995 1047
4	148 07 54.1	4 58 12.2	4 46.9	6 52 36.3	6 51.3	9.542 4498	9.989 9325	9.984 7097
5	153 01 20.0	4 48 41.5	6 44.2	6 44 22.7	9 32.6	9.549 3651	9.979 4398	9.974 1265
6	157 45 21.6	+ 4 39 24.4	- 8 26.6	+ 6 33 37.7	- 11 54.1	9.556 3043	9.968 7736	9.963 3845
7	162 20 14.9	4 30 25.4	9 52.8	6 20 40.7	13 56.8	9.563 2156	9.957 9629	9.952 5126
8	166 46 19.5	4 21 47.6	11 01.9	6 05 50.0	15 41.9	9.570 0539	9.947 0370	9.941 5395
9	171 03 58.1	4 13 33.4	11 53.8	5 49 22.3	17 11.0	9.576 7811	9.936 0238	9.930 4937
10	175 13 34.4	4 05 43.8	12 28.9	5 31 32.8	18 25.7	9.583 3645	9.924 9528	9.919 4044
11	179 15 34.0	+ 3 58 19.8	- 12 47.9	+ 5 12 35.3	- 19 27.3	9.589 7769	9.913 8526	9.908 3012
12	183 10 22.7	3 51 22.0	12 51.9	4 52 42.0	20 17.6	9.595 9958	9.902 7540	9.897 2146
13	186 58 26.6	3 44 49.9	12 42.0	4 32 03.6	20 57.5	9.602 0030	9.891 6873	9.886 1762
14	190 40 11.0	3 38 43.2	12 19.4	4 10 49.9	21 28.6	9.607 7836	9.880 6856	9.875 2196
15	194 16 01.2	3 33 01.2	11 45.7	3 49 08.9	21 52.1	9.613 3261	9.869 7829	9.864 3796
16	197 46 21.4	+ 3 27 43.1	- 11 02.0	+ 3 27 08.0	- 22 08.7	9.618 6210	9.859 0148	9.853 6931
17	201 11 35.1	+ 3 22 48.2	- 10 09.8	+ 3 04 53.4	- 22 19.6	9.623 6615	9.848 4197	9.843 1992

MERCURY.

GREENWICH MEAN NOON.

Date.	Heliocentric Longitude, Mean Equinox of Date.	Daily Motion.	Reduction to Orbit.	Heliocentric Latitude.	Daily Motion.	Logarithm of Radius Vector.	Logarithm of Distance from Earth—	
							At Date.	At Intermediate Date.
May 16	197 46 21.4	+ 3 27 43.1	- 11 02.0	+ 3 27 08.0	- 22 08.7	9.618 6210	9.859 0148	9.853 6931
17	201 11 35.1	3 22 48.2	10 09.8	3 04 53.4	22 19.6	9.623 6615	9.848 4197	9.843 1992
18	204 32 05.1	3 18 15.4	9 10.4	2 42 30.5	22 25.5	9.628 4422	9.838 0374	9.832 9395
19	207 48 12.9	3 14 03.8	8 04.9	2 20 03.9	22 27.0	9.632 9594	9.827 9113	9.822 9580
20	211 00 19.4	3 10 12.5	6 54.7	1 57 37.8	22 24.7	9.637 2105	9.818 0859	9.813 3009
21	214 08 44.3	+ 3 06 40.5	- 5 40.7	+ 1 35 15.5	- 22 19.3	9.641 1939	9.808 6092	9.804 0166
22	217 13 46.6	3 03 27.1	4 23.9	1 13 00.1	22 11.1	9.644 9087	9.799 5299	9.795 1555
23	220 15 44.3	3 00 31.2	3 05.5	0 50 54.1	22 00.5	9.648 3547	9.790 9000	9.786 7668
24	223 14 54.7	2 57 52.3	1 46.2	0 28 59.8	21 47.8	9.651 5320	9.782 7714	9.778 9116
25	226 11 34.4	2 55 29.7	- 0 26.9	+ 0 07 19.2	21 33.2	9.654 4413	9.775 1970	9.771 6343
26	229 05 59.2	+ 2 53 22.4	+ 0 51.7	- 0 14 06.0	- 21 17.0	9.657 0832	9.768 2300	9.764 9905
27	231 58 24.2	2 51 30.1	2 08.9	0 35 14.4	20 59.5	9.659 4588	9.761 9219	9.759 0304
28	234 49 04.2	2 49 52.2	3 24.0	0 56 04.5	20 40.5	9.661 5690	9.756 3216	9.753 8016
29	237 38 13.3	2 48 28.2	4 36.5	1 16 35.1	20 20.4	9.663 4148	9.751 4753	9.749 3479
30	240 26 05.2	2 47 17.8	5 45.7	1 36 45.0	19 59.2	9.664 9972	9.747 4241	9.745 7082
31	243 12 53.4	+ 2 46 20.7	+ 6 51.2	- 1 56 33.2	- 19 37.0	9.666 3171	9.744 2039	9.742 9143
June 1	245 58 50.8	2 45 36.2	7 52.5	2 15 58.6	19 13.6	9.667 3753	9.741 8423	9.740 9903
2	248 44 10.1	2 45 04.5	8 49.1	2 35 00.1	18 49.3	9.668 1723	9.740 3602	9.739 9530
3	251 29 03.9	2 44 45.1	9 40.7	2 53 36.8	18 23.9	9.668 7089	9.739 7694	9.739 8094
4	254 13 44.5	2 44 38.1	10 26.8	3 11 47.5	17 57.3	9.668 9852	9.740 0726	9.740 5578
5	256 58 24.2	+ 2 44 43.3	+ 11 07.2	- 3 29 31.1	- 17 29.7	9.669 0016	9.741 2635	9.742 1876
6	259 43 15.2	2 45 00.7	11 41.4	3 46 46.5	17 00.9	9.668 7579	9.743 3269	9.744 6786
7	262 28 29.7	2 45 30.4	12 09.2	4 03 32.4	16 30.7	9.668 2542	9.746 2388	9.748 0034
8	265 14 20.0	2 46 12.3	12 30.3	4 19 47.4	15 59.0	9.667 4899	9.749 9680	9.752 1278
9	268 00 58.4	2 47 06.6	12 44.5	4 35 30.0	15 25.9	9.666 4647	9.754 4772	9.757 0105
10	270 48 37.4	+ 2 48 13.6	+ 12 51.5	- 4 50 38.7	- 14 51.1	9.665 1777	9.759 7220	9.762 6063
11	273 37 29.8	2 49 33.4	12 51.2	5 05 11.6	14 14.4	9.663 6283	9.765 6567	9.768 8667
12	276 27 48.5	2 51 06.2	12 43.3	5 19 06.8	13 35.7	9.661 8156	9.772 2299	9.775 7399
13	279 19 46.6	2 52 52.5	12 27.7	5 32 22.2	12 54.7	9.659 7387	9.779 3903	9.783 1744
14	282 13 37.9	2 54 52.5	12 04.4	5 44 55.3	12 11.1	9.657 3965	9.787 0856	9.791 1174
15	285 09 36.3	+ 2 57 06.8	+ 11 33.3	- 5 56 43.5	- 11 24.8	9.654 7880	9.795 2635	9.799 5173
16	288 07 56.3	2 59 35.8	10 54.4	6 07 43.9	10 35.4	9.651 9124	9.803 8729	9.808 3240
17	291 08 52.8	3 02 20.0	10 07.8	6 17 53.3	9 42.8	9.648 7688	9.812 8648	9.817 4893
18	294 12 41.3	3 05 19.8	9 13.6	6 27 08.3	8 46.4	9.645 3566	9.822 1920	9.826 9673
19	297 19 37.9	3 08 36.1	8 12.1	6 35 24.8	7 46.0	9.641 6756	9.831 8100	9.836 7144
20	300 29 59.2	+ 3 12 09.4	+ 7 03.5	- 6 42 38.8	- 6 41.1	9.637 7260	9.841 6762	9.846 6901
21	303 44 02.7	3 16 00.6	5 48.3	6 48 45.4	5 31.3	9.633 5086	9.851 7516	9.856 8561
22	307 02 06.5	3 20 10.1	4 27.0	6 53 39.7	4 16.3	9.629 0248	9.861 9994	9.867 1771
23	310 24 29.2	3 24 38.6	3 00.4	6 57 16.1	2 55.4	9.624 2770	9.872 3853	9.877 6199
24	313 51 30.4	3 29 27.1	+ 1 29.2	6 59 28.5	- 1 28.3	9.619 2689	9.882 8775	9.888 1542
25	317 23 30.2	+ 3 34 36.1	- 0 05.5	- 7 00 10.4	+ 0 05.6	9.614 0056	9.893 4465	9.898 7509
26	321 00 49.6	3 40 06.2	1 42.5	6 59 14.9	1 46.7	9.608 4939	9.904 0642	9.909 3832
27	324 43 49.9	3 45 58.0	3 20.3	6 56 34.5	3 35.4	9.602 7427	9.914 7047	9.920 0256
28	328 32 53.1	3 52 12.1	4 57.3	6 52 01.4	5 32.3	9.596 7632	9.925 3429	9.930 6537
29	332 28 21.6	3 58 48.6	6 31.5	6 45 27.1	7 37.6	9.590 5698	9.935 9551	9.941 2442
30	336 30 37.9	+ 4 05 47.7	- 8 00.9	- 6 36 43.3	+ 9 51.5	9.584 1806	9.946 5181	9.951 7740
July 1	340 40 04.5	+ 4 13 09.1	- 9 23.0	- 6 25 41.3	+ 12 14.0	9.577 6173	9.957 0091	9.962 2204

MERCURY.								
GREENWICH MEAN NOON.								
Date.	Heliocentric Longitude, Mean Equinox of Date.	Daily Motion.	Reduction to Orbit.	Heliocentric Latitude.	Daily Motion.	Logarithm of Radius Vector.	Logarithm of Distance from Earth—	
							At Date.	At Interme- diate Date
July 1	340 40 04.5	+ 4 13 09.1	- 9 23.0	- 6 25 41.3	+ 12 14.0	9.577 6173	9.957 0091	9.962 2204
2	344 57 03.4	4 20 52.2	10 35.3	6 12 12.5	14 45.1	9.570 9065	9.967 4052	9.972 5607
3	349 21 55.8	4 28 56.1	11 35.1	5 56 08.4	17 24.4	9.564 0801	9.977 6838	9.982 7717
4	353 55 01.9	4 37 19.0	12 19.5	5 37 21.4	20 10.6	9.557 1756	9.987 8214	9.992 8300
5	358 36 39.4	4 45 58.7	12 45.9	5 15 45.2	23 02.7	9.550 2372	9.997 7944	0.002 7115
6	3 27 03.8	+ 4 54 52.0	- 12 51.6	- 4 51 14.6	+ 25 59.0	9.543 3155	0.007 5781	0.012 3912
7	8 26 26.7	5 03 55.1	12 34.5	4 23 46.7	28 56.7	9.536 4693	0.017 1473	0.021 8432
8	13 34 55.6	5 13 03.0	11 53.0	3 53 21.7	31 52.8	9.529 7636	0.026 4755	0.031 0407
9	18 52 32.2	5 22 09.4	10 46.2	3 20 03.0	34 43.3	9.523 2712	0.035 5354	0.039 9563
10	24 19 11.5	5 31 07.1	9 14.5	2 43 58.6	37 23.4	9.517 0709	0.044 2999	0.048 5625
11	29 54 40.8	+ 5 39 47.8	- 7 19.4	- 2 05 21.3	+ 39 48.2	9.511 2466	0.052 7407	0.056 8308
12	35 38 38.5	5 48 02.4	5 03.9	1 24 29.3	41 51.7	9.505 8853	0.060 8295	0.064 7333
13	41 30 33.4	5 55 40.4	- 2 32.7	- 0 41 46.9	43 28.1	9.501 0749	0.068 5389	0.072 2428
14	47 29 43.6	6 02 31.3	+ 0 08.3	+ 0 02 16.1	44 31.8	9.496 9011	0.075 8420	0.079 3334
15	53 35 16.8	6 08 24.7	2 51.7	0 47 04.2	44 57.7	9.493 4432	0.082 7144	0.085 9820
16	59 46 10.3	+ 6 13 10.1	+ 5 29.5	+ 1 31 57.8	+ 44 42.3	9.490 7711	0.089 1341	0.092 1678
17	66 01 11.5	6 16 38.9	7 53.3	2 16 14.3	43 43.2	9.488 9417	0.095 0818	0.097 8742
18	72 19 00.1	6 18 43.7	9 55.2	2 59 09.7	42 00.2	9.487 9947	0.100 5432	0.103 0877
19	78 38 09.3	6 19 19.6	11 28.6	3 40 00.8	39 35.2	9.487 9517	0.105 5072	0.107 8010
20	84 57 09.0	6 18 24.6	12 28.5	4 18 07.6	36 32.3	9.488 8136	0.109 9690	0.112 0109
21	91 14 28.3	+ 6 15 59.2	+ 12 51.9	+ 4 52 54.7	+ 32 57.1	9.490 5610	0.113 9274	0.115 7188
22	97 28 38.6	6 12 07.4	12 38.6	5 23 53.5	28 56.8	9.493 1553	0.117 3865	0.118 9315
23	103 38 16.5	6 06 55.8	11 50.4	5 50 42.5	24 39.1	9.496 5416	0.120 3556	0.121 6601
24	109 42 06.5	6 00 33.0	10 31.0	6 13 08.5	20 12.1	9.500 6507	0.122 8472	0.123 9190
25	115 39 02.1	5 53 09.2	8 46.0	6 31 06.0	15 43.3	9.505 4043	0.124 8779	0.125 7263
26	121 28 08.3	+ 5 44 56.0	+ 6 41.5	+ 6 44 36.6	+ 11 19.3	9.510 7170	0.126 4668	0.127 1026
27	127 08 41.4	5 36 04.8	4 24.3	6 53 48.0	7 05.8	9.516 5013	0.127 6347	0.128 0679
28	132 40 09.1	5 26 47.1	+ 2 00.9	6 58 53.0	+ 3 07.0	9.522 6697	0.128 4042	0.128 6463
29	138 02 10.4	5 17 13.4	- 0 22.8	7 00 07.9	- 0 34.0	9.529 1378	0.128 7975	0.128 8609
30	143 14 33.8	5 07 33.1	2 41.4	6 57 51.4	3 55.5	9.535 8264	0.128 8390	0.128 7345
31	148 17 17.2	+ 4 57 54.4	- 4 50.8	+ 6 52 23.6	- 6 56.6	9.542 6623	0.128 5501	0.128 2883
Aug. 1	153 10 25.4	4 48 24.0	6 47.6	6 44 04.9	9 37.3	9.549 5794	0.127 9520	0.127 5440
2	157 54 09.8	4 39 07.5	8 29.6	6 33 15.5	11 58.2	9.556 5185	0.127 0665	0.126 5220
3	162 28 46.4	4 30 09.1	9 55.2	6 20 14.8	14 00.3	9.563 4283	0.125 9127	0.125 2408
4	166 54 35.1	4 21 32.0	11 03.7	6 05 20.8	15 44.9	9.570 2638	0.124 5082	0.123 7173
5	171 11 58.2	+ 4 13 18.4	- 11 55.1	+ 5 48 50.4	- 17 13.5	9.576 9870	0.122 8697	0.121 9674
6	175 21 20.1	4 05 29.7	12 29.7	5 30 58.6	18 27.8	9.583 5656	0.121 0121	0.120 0057
7	179 23 06.1	3 58 06.6	12 48.3	5 11 59.2	19 29.1	9.589 9724	0.118 9494	0.117 8448
8	183 17 42.0	3 51 09.5	12 51.8	4 52 04.3	20 18.9	9.596 1850	0.116 6933	0.115 4962
9	187 05 33.7	3 44 38.2	12 41.5	4 31 24.8	20 58.6	9.602 1855	0.114 2548	0.112 9702
10	190 47 06.8	+ 3 38 32.2	- 12 18.6	+ 4 10 10.1	- 21 29.5	9.607 9589	0.111 6434	0.110 2753
11	194 22 46.3	3 32 51.0	11 44.5	3 48 28.4	21 52.7	9.613 4937	0.108 8670	0.107 4194
12	197 52 56.7	3 27 33.7	11 00.5	3 26 27.0	22 09.2	9.618 7809	0.105 9332	0.104 4092
13	201 18 01.3	3 22 39.4	10 08.1	3 04 12.0	22 19.9	9.623 8133	0.102 8480	0.101 2503
14	204 38 22.9	3 18 07.3	9 08.5	2 41 48.9	22 25.6	9.628 5858	0.099 6166	0.097 9474
15	207 54 22.9	+ 3 13 56.3	- 8 02.9	+ 2 19 22.2	- 22 27.0	9.633 0948	0.096 2430	0.094 5038
16	211 06 22.2	+ 3 10 05.6	- 6 52.4	+ 1 56 56.2	- 22 24.6	9.637 3377	0.092 7302	0.090 9227

MERCURY.

GREENWICH MEAN NOON.

Date.	Heliocentric Longitude, Mean Equinox of Date.	Daily Motion.	Reduction to Orbit.	Heliocentric Latitude.	Daily Motion.	Logarithm of Radius Vector.	Logarithm of Distance from Earth—	
							At Date.	At Interme- diate Date.
Aug. 16	211 06 22.2	+ 3 10 05.6	- 6 52.4	+ 1 56 56.2	- 22 24.6	9.637 3377	0.092 7302	0.090 9227
17	214 14 40.6	3 06 34.3	5 38.3	1 34 34.1	22 19.1	9.641 3128	0.089 0813	0.087 2062
18	217 19 36.9	3 03 21.4	4 21.5	1 12 19.0	22 10.8	9.645 0193	0.085 2976	0.083 3556
19	220 21 29.2	3 00 26.1	3 03.1	0 50 13.3	22 00.1	9.648 4569	0.081 3803	0.079 3718
20	223 20 34.7	2 57 47.6	1 43.8	0 28 19.5	21 47.3	9.651 6261	0.077 3300	0.075 2548
21	226 17 09.9	+ 2 55 25.4	- 0 24.4	+ 0 06 39.3	- 21 32.8	9.654 5270	0.073 1463	0.071 0043
22	229 11 30.7	2 53 18.7	+ 0 54.2	- 0 14 45.5	21 16.5	9.657 1607	0.068 8287	0.066 6193
23	232 03 52.3	2 51 26.8	2 11.3	0 35 53.3	20 58.9	9.659 5281	0.064 3759	0.062 0984
24	234 54 29.2	2 49 49.4	3 26.4	0 56 42.8	20 39.9	9.661 6301	0.059 7866	0.057 4402
25	237 43 35.8	2 48 26.0	4 38.7	1 17 12.8	20 19.8	9.663 4677	0.055 0588	0.052 6422
26	240 31 25.6	+ 2 47 15.9	+ 5 47.8	- 1 37 22.1	- 19 58.6	9.665 0420	0.050 1900	0.047 7020
27	243 18 12.0	2 46 19.1	6 53.1	1 57 09.6	19 36.2	9.666 3537	0.045 1779	0.042 6174
28	246 04 08.0	2 45 35.0	7 54.3	2 16 34.2	19 12.9	9.667 4038	0.040 0199	0.037 3850
29	248 49 26.3	2 45 03.7	8 50.8	2 35 35.0	18 48.5	9.668 1927	0.034 7123	0.032 0015
30	251 34 19.5	2 44 44.7	9 42.2	2 54 10.9	18 23.1	9.668 7212	0.029 2522	0.026 4638
31	254 18 59.9	+ 2 44 38.1	+ 10 28.1	- 3 12 20.8	- 17 56.5	9.668 9896	0.023 6359	0.020 7682
Sept. 1	257 03 39.8	2 44 43.7	11 08.3	3 30 03.6	17 28.9	9.668 9978	0.017 8601	0.014 9111
2	259 48 31.3	2 45 01.5	11 42.4	3 47 18.1	16 59.9	9.668 7461	0.011 9210	0.008 8898
3	262 33 46.8	2 45 31.5	12 10.0	4 04 03.0	16 29.7	9.668 2342	0.005 8165	0.002 7004
4	265 19 38.4	2 46 13.8	12 30.9	4 20 17.0	15 58.1	9.667 4618	9.999 5414	9.996 3394
5	268 06 18.5	+ 2 47 08.5	+ 12 44.8	- 4 35 58.7	- 15 24.9	9.666 4285	9.993 0939	9.989 8045
6	270 53 59.6	2 48 15.8	12 51.6	4 51 06.3	14 50.0	9.665 1333	9.986 4710	9.983 0932
7	273 42 54.5	2 49 36.0	12 51.0	5 05 38.1	14 13.2	9.663 5758	9.979 6710	9.976 2042
8	276 33 16.0	2 51 09.3	12 42.9	5 19 32.1	13 34.4	9.661 7548	9.972 6928	9.969 1368
9	279 25 17.5	2 52 55.9	12 27.1	5 32 46.1	12 53.3	9.659 6695	9.965 5364	9.961 8916
10	282 19 12.5	+ 2 54 56.4	+ 12 03.5	- 5 45 17.9	- 12 09.7	9.657 3190	9.958 2030	9.954 4709
11	285 15 15.1	2 57 11.1	11 32.2	5 57 04.6	11 23.3	9.654 7023	9.950 6960	9.946 8788
12	288 13 39.7	2 59 40.5	10 53.1	6 08 03.5	10 33.9	9.651 8183	9.943 0206	9.939 1223
13	291 14 41.3	3 02 25.3	10 06.2	6 18 11.3	9 41.1	9.648 6664	9.935 1852	9.931 2107
14	294 18 35.5	3 05 25.7	9 11.8	6 27 24.5	8 44.6	9.645 2458	9.927 2006	9.923 1571
15	297 25 38.2	+ 3 08 42.5	+ 8 10.1	- 6 35 39.2	- 7 44.1	9.641 5563	9.919 0828	9.914 9801
16	300 36 06.2	3 12 16.4	7 01.3	6 42 51.2	6 39.1	9.637 5983	9.910 8523	9.906 7027
17	303 50 17.0	3 16 08.1	5 45.9	6 48 55.7	5 29.1	9.633 3724	9.902 5352	9.898 3538
18	307 08 28.5	3 20 18.2	4 24.4	6 53 47.6	4 13.9	9.628 8803	9.894 1653	9.889 9730
19	310 30 59.7	3 24 47.4	2 57.6	6 57 21.5	2 52.8	9.624 1243	9.885 7841	9.881 6055
20	313 58 09.9	+ 3 29 36.4	+ 1 26.3	- 6 59 31.2	- 1 25.5	9.619 1081	9.877 4443	9.873 3086
21	317 30 19.4	3 34 46.1	- 0 08.5	7 00 10.3	+ 0 08.6	9.613 8369	9.869 2075	9.865 1510
22	321 07 49.1	3 40 16.9	1 45.5	6 59 11.6	1 49.9	9.608 3176	9.861 1496	9.857 2149
23	324 51 00.4	3 46 09.4	3 23.3	6 56 27.9	3 38.9	9.602 5589	9.853 3594	9.849 5965
24	328 40 15.3	3 52 24.2	5 00.2	6 51 51.1	5 36.0	9.596 5724	9.845 9406	9.842 4069
25	332 35 56.3	+ 3 59 01.5	- 6 34.4	- 6 45 13.0	+ 7 41.6	9.590 3727	9.839 0114	9.835 7711
26	336 38 25.7	4 06 01.2	8 03.5	6 36 25.0	9 55.8	9.583 9776	9.832 7038	9.829 8285
27	340 48 06.1	4 13 23.4	9 25.4	6 25 18.5	12 18.6	9.577 4094	9.827 1625	9.824 7261
28	345 05 19.6	4 21 07.1	10 37.4	6 11 44.9	14 50.0	9.570 6945	9.822 5387	9.820 6202
29	349 30 27.2	4 29 11.5	11 36.7	5 55 35.8	17 29.4	9.563 8650	9.818 9897	9.817 6657
30	354 03 49.0	+ 4 37 35.1	- 12 20.6	- 5 36 43.8	+ 20 15.8	9.556 9588	9.816 6663	9.816 0084
Oct. 1	358 45 42.9	+ 4 46 15.3	- 12 46.4	- 5 15 02.2	+ 23 08.2	9.550 0201	9.815 7075	9.815 7774

MERCURY.								
GREENWICH MEAN NOON.								
Date.	Heliocentric Longitude, Mean Equinox of Date.	Daily Motion.	Reduction to Orbit.	Heliocentric Latitude.	Daily Motion.	Logarithm of Radius Vector.	Logarithm of Distance from Earth—	
							At Date.	At Interme- diate Date
Oct.	1 358 45 42.9	+ 4 46 15.3	- 12 46.4	- 5 15 02.2	+ 23 08.2	9.550 0201	9.815 7075	9.815 7774
	2 3 36 24.0	4 55 09.0	12 51.5	4 50 26.1	26 04.5	9.543 0999	9.816 2298	9.817 0751
	3 8 36 04.0	5 04 12.2	12 33.6	4 22 52.7	29 02.3	9.536 2569	9.818 3184	9.819 9656
	4 13 44 50.0	5 13 20.1	11 51.3	3 52 22.2	31 58.2	9.529 5571	9.822 0175	9.824 4727
	5 19 02 43.7	5 22 26.4	10 43.7	3 18 58.2	34 48.4	9.523 0728	9.827 3266	9.830 5714
	6 24 29 39.8	+ 5 31 23.4	- 9 11.2	- 2 42 48.8	+ 37 28.1	9.516 8830	9.834 1967	9.838 1889
	7 30 05 25.3	5 40 03.0	7 15.4	2 04 07.0	39 52.4	9.511 0720	9.842 5322	9.847 2084
	8 35 49 38.5	5 48 16.8	4 59.4	1 23 11.1	41 55.2	9.505 7268	9.852 1969	9.857 4757
	9 41 41 47.6	5 55 53.9	- 2 27.7	- 0 40 25.7	43 30.5	9.500 9355	9.863 0213	9.868 8092
	10 47 41 10.6	6 02 43.3	+ 0 13.4	+ 0 03 39.1	44 33.2	9.496 7828	9.874 8144	9.881 0108
	11 53 46 54.8	+ 6 08 34.5	+ 2 56.8	+ 0 48 28.1	+ 44 57.9	9.493 3486	9.887 3726	9.893 8738
	12 59 57 57.0	6 13 17.8	5 34.2	1 33 21.2	44 41.1	9.490 7021	9.900 4897	9.907 1955
	13 66 13 04.7	6 16 43.9	7 57.4	2 17 35.8	43 40.7	9.488 8998	9.913 9682	9.920 7843
	14 72 30 56.9	6 18 46.0	9 58.6	3 00 28.0	41 56.3	9.487 9810	9.927 6228	9.934 4634
	15 78 50 07.0	6 19 19.1	11 31.0	3 41 14.6	39 30.0	9.487 9665	9.941 2873	9.948 0770
	16 85 09 04.8	+ 6 18 21.2	+ 12 29.7	+ 4 19 15.6	+ 36 26.0	9.488 8564	9.954 8168	9.961 4926
	17 91 26 19.3	6 15 53.0	12 52.1	4 53 56.1	32 50.0	9.490 6308	9.968 0909	9.974 5999
	18 97 40 22.1	6 11 58.7	12 37.6	5 24 47.3	28 48.9	9.493 2509	9.981 0092	9.987 3097
	19 103 49 50.1	6 06 44.7	11 48.3	5 51 28.3	24 30.9	9.496 6610	9.993 4945	9.999 5562
	20 109 53 27.8	6 00 19.8	10 28.1	6 13 46.0	20 03.7	9.500 7916	0.005 4897	0.011 2905
	21 115 50 09.5	+ 5 52 54.3	+ 8 42.3	+ 6 31 35.2	+ 15 35.0	9.505 5642	0.016 9551	0.022 4809
	22 121 39 00.0	5 44 39.6	6 37.4	6 44 57.6	11 11.2	9.510 8927	0.027 8662	0.033 1097
	23 127 19 16.3	5 35 47.6	4 19.9	6 54 01.1	6 58.1	9.516 6899	0.038 2109	0.043 1699
	24 132 50 26.5	5 26 29.3	+ 1 56.4	6 58 58.7	+ 2 59.9	9.522 8688	0.047 9874	0.052 6646
	25 138 12 09.7	5 16 55.2	- 0 27.2	7 00 06.7	- 0 40.6	9.529 3448	0.057 2028	0.061 6035
	26 143 24 14.9	+ 5 07 14.9	- 2 45.6	+ 6 57 44.0	- 4 01.4	9.536 0391	0.065 8688	0.070 0010
	27 148 26 40.1	4 57 36.3	4 54.6	6 52 10.6	7 01.9	9.542 8784	0.074 0025	0.077 8758
	28 153 19 30.4	4 48 06.3	6 51.0	6 43 47.0	9 41.9	9.549 7969	0.081 6237	0.085 2489
	29 158 02 57.3	4 38 50.3	8 32.5	6 32 53.3	12 02.2	9.556 7358	0.088 7543	0.092 1432
	30 162 37 17.1	4 29 52.6	9 57.6	6 19 48.8	14 03.7	9.563 6437	0.095 4170	0.098 5801
	31 167 02 49.6	+ 4 21 16.2	- 11 05.6	+ 6 04 51.7	- 15 47.8	9.570 4763	0.101 6349	0.104 5840
Nov.	1 171 19 57.3	4 13 03.3	11 56.5	5 48 18.5	17 16.1	9.577 1952	0.107 4304	0.110 1770
	2 175 29 04.6	4 05 15.4	12 30.6	5 30 24.4	18 29.9	9.583 7686	0.112 8264	0.115 3812
	3 179 30 36.7	3 57 53.2	12 48.6	5 11 23.1	19 30.7	9.590 1694	0.117 8439	0.120 2171
	4 183 24 59.6	3 50 56.9	12 51.7	4 51 26.8	20 20.2	9.596 3755	0.122 5031	0.124 7045
	5 187 12 39.1	+ 3 44 26.4	- 12 41.0	+ 4 30 46.0	- 20 59.7	9.602 3691	0.126 8234	0.128 8621
	6 190 54 00.8	3 38 21.2	12 17.7	4 09 30.4	21 30.3	9.608 1352	0.130 8226	0.132 7070
	7 194 29 29.7	3 32 40.7	11 43.3	3 47 48.0	21 53.3	9.613 6624	0.134 5173	0.136 2553
	8 197 59 30.1	3 27 24.1	10 59.0	3 25 46.1	22 09.6	9.618 9416	0.137 9227	0.139 5215
	9 201 24 25.6	3 22 30.6	10 06.4	3 03 30.8	22 20.1	9.623 9659	0.141 0531	0.142 5194
	10 204 44 38.7	+ 3 17 59.2	- 9 06.5	+ 2 41 07.5	- 22 25.7	9.628 7304	0.143 9217	0.145 2610
	11 208 00 31.0	3 13 48.8	8 00.7	2 18 40.9	22 26.9	9.633 2310	0.146 5402	0.147 7552
	12 211 12 23.1	3 09 58.7	6 50.2	1 56 14.9	22 24.5	9.637 4656	0.148 9195	0.150 0225
	13 214 20 34.9	3 06 28.0	5 36.0	1 33 53.0	22 18.9	9.641 4322	0.151 0693	0.152 0610
	14 217 25 25.3	3 03 15.7	4 19.2	1 11 38.1	22 10.5	9.645 1303	0.152 9986	0.153 8830
	15 220 27 12.1	+ 3 00 20.9	- 3 00.6	+ 0 49 32.8	- 21 59.7	9.648 5595	0.154 7153	0.155 4962
	16 223 26 12.7	+ 2 57 43.1	- 1 41.3	+ 0 27 39.2	- 21 46.9	9.651 7200	0.156 2266	0.156 9073

MERCURY.

GREENWICH MEAN NOON.

Date.	Heliocentric Longitude, Mean Equinox of Date.	Daily Motion.	Reduction to Orbit.	Heliocentric Latitude.	Daily Motion.	Logarithm of Radius Vector.	Logarithm of Distance from Earth—	
							At Date.	At Intermediate Date.
Nov. 16	223 26 12.7	+ 2 57 43.1	- 1 41.3	+ 0 27 39.2	- 21 46.9	9.651 7200	0.156 2266	0.156 9073
17	226 22 43.6	2 55 21.3	- 0 22.0	+ 0 05 59.6	21 32.3	9.654 6127	0.157 5390	0.158 1225
18	229 17 00.5	2 53 15.0	+ 0 56.5	- 0 15 24.7	21 16.0	9.657 2383	0.158 6582	0.159 1468
19	232 09 18.6	2 51 23.6	2 13.6	0 36 31.9	20 58.3	9.659 5972	0.159 5888	0.159 9850
20	234 59 52.5	2 49 46.6	3 28.6	0 57 20.9	20 39.4	9.661 6910	0.160 3357	0.160 6413
21	237 48 56.5	+ 2 48 23.6	+ 4 40.8	- 1 17 50.3	- 20 19.2	9.663 5204	0.160 9022	0.161 1188
22	240 36 44.2	2 47 13.9	5 49.8	1 37 58.9	19 57.9	9.665 0866	0.161 2913	0.161 4202
23	243 23 28.8	2 46 17.5	6 55.1	1 57 45.7	19 35.6	9.666 3901	0.161 5057	0.161 5480
24	246 09 23.5	2 45 34.0	7 56.1	2 17 09.6	19 12.2	9.667 4320	0.161 5473	0.161 5038
25	248 54 40.9	2 45 02.9	8 52.4	2 36 09.7	18 47.8	9.668 2128	0.161 4176	0.161 2887
26	251 39 33.5	+ 2 44 44.3	+ 9 43.7	- 2 54 44.8	- 18 22.3	9.668 7332	0.161 1171	0.160 9032
27	254 24 13.7	2 44 38.1	10 29.5	3 12 53.9	17 55.7	9.668 9936	0.160 6466	0.160 3473
28	257 08 53.8	2 44 44.1	11 09.5	3 30 35.8	17 27.9	9.668 9937	0.160 0053	0.159 6206
29	259 53 46.0	2 45 02.3	11 43.3	3 47 49.4	16 59.0	9.668 7339	0.159 1929	0.158 7220
30	262 39 02.4	2 45 32.6	12 10.7	4 04 33.4	16 28.8	9.668 2141	0.158 2078	0.157 6501
Dec. 1	265 24 55.4	+ 2 46 15.3	+ 12 31.4	- 4 20 46.6	- 15 57.2	9.667 4337	0.157 0485	0.156 4028
2	268 11 37.2	2 47 10.4	12 45.1	4 36 27.2	15 23.8	9.666 3923	0.155 7125	0.154 9773
3	270 59 20.4	2 48 18.2	12 51.7	4 51 33.6	14 48.9	9.665 0891	0.154 1968	0.153 3707
4	273 48 17.8	2 49 38.7	12 50.9	5 06 04.3	14 12.1	9.663 5235	0.152 4982	0.151 5788
5	276 38 42.2	2 51 12.3	12 42.5	5 19 57.1	13 33.2	9.661 6944	0.150 6120	0.149 5974
6	279 30 47.0	+ 2 52 59.5	+ 12 26.5	- 5 33 09.9	- 12 52.0	9.659 6011	0.148 5341	0.147 4215
7	282 24 45.8	2 55 00.4	12 02.7	5 45 40.3	12 08.4	9.657 2424	0.146 2587	0.145 0452
8	285 20 52.6	2 57 15.5	11 31.1	5 57 25.7	11 21.9	9.654 6175	0.143 7799	0.142 4621
9	288 19 21.8	2 59 45.4	10 51.7	6 08 23.0	10 32.3	9.651 7252	0.141 0908	0.139 6651
10	291 20 28.6	3 02 30.6	10 04.7	6 18 29.2	9 39.5	9.648 5650	0.138 1839	0.136 6462
11	294 24 28.3	+ 3 05 31.5	+ 9 10.0	- 6 27 40.7	- 8 42.8	9.645 1361	0.135 0507	0.133 3965
12	297 31 37.1	3 08 48.8	8 08.0	6 35 53.5	7 42.1	9.641 4386	0.131 6821	0.129 9064
13	300 42 11.7	3 12 23.3	6 59.0	6 43 03.4	6 37.0	9.637 4724	0.128 0679	0.126 1655
14	303 56 29.6	3 16 15.5	5 43.4	6 49 05.8	5 26.9	9.633 2385	0.124 1975	0.122 1624
15	307 14 48.9	3 20 26.1	4 21.8	6 53 55.4	4 11.5	9.628 7382	0.120 0587	0.117 8847
16	310 37 28.3	+ 3 24 55.9	+ 2 54.9	- 6 57 26.8	- 2 50.2	9.623 9742	0.115 6387	0.113 3191
17	314 04 47.4	3 29 45.6	+ 1 23.4	6 59 33.8	- 1 22.7	9.618 9503	0.110 9239	0.108 4514
18	317 37 06.4	3 34 55.9	- 0 11.4	7 00 10.0	+ 0 11.6	9.613 6716	0.105 8996	0.103 2660
19	321 14 46.3	3 40 27.4	1 48.5	6 59 08.2	1 53.2	9.608 1447	0.100 5488	0.097 7463
20	324 58 08.5	3 46 20.6	3 26.3	6 56 21.1	3 42.4	9.602 3790	0.094 8561	0.091 8760
21	328 47 34.9	+ 3 52 36.0	- 5 03.2	- 6 51 40.7	+ 5 39.8	9.596 3859	0.088 8035	0.085 6361
22	332 43 28.0	3 59 14.0	6 37.2	6 44 58.7	7 45.6	9.590 1801	0.082 3716	0.079 0077
23	336 46 10.3	4 06 14.4	8 06.2	6 36 06.6	10 00.1	9.583 7794	0.075 5420	0.071 9720
24	340 50 04.2	4 13 37.2	9 27.8	6 24 55.7	12 23.2	9.577 2063	0.068 2951	0.064 5089
25	345 13 31.9	4 21 21.6	10 39.4	6 11 17.4	14 54.8	9.570 4876	0.060 6110	0.056 5991
26	349 38 54.3	+ 4 29 26.6	- 11 38.3	- 5 55 03.5	+ 17 34.3	9.563 6554	0.052 4708	0.048 2239
27	354 12 31.5	4 37 50.7	12 21.7	5 36 06.4	20 21.1	9.556 7475	0.043 8563	0.039 3659
28	358 54 41.2	4 46 31.2	12 46.9	5 14 19.4	23 13.6	9.549 8087	0.034 7510	0.030 0103
29	3 45 38.5	4 55 25.4	12 51.3	4 49 37.9	26 09.9	9.542 8902	0.025 1424	0.020 1465
30	8 45 35.1	5 04 28.9	12 32.7	4 21 59.1	29 07.7	9.536 0506	0.015 0220	0.009 7689
31	13 54 37.8	+ 5 13 36.8	- 11 49.6	- 3 51 23.2	+ 32 03.5	9.529 3562	0.004 3876	9.998 8792
32	19 12 48.1	+ 5 22 42.9	- 10 41.3	- 3 17 54.1	+ 34 53.5	9.522 8798	9.993 2457	

VENUS.								
GREENWICH MEAN NOON.								
Date.	Heliocentric Longitude, Mean Equinox of Date.	Daily Motion.	Reduction to Orbit.	Heliocentric Latitude.	Daily Motion.	Logarithm of Radius Vector.	Logarithm of Distance from Earth—	
							At Date.	At Intermediate Date.
Jan.	1 298 50 38.7	+ 1 34 50.3	+ 3 00.6	- 2 19 02.7	- 4 06.2	9.862 2446	0.227 4701	0.227 1173
	3 302 00 19.6	1 34 50.7	3 00.8	2 27 02.2	3 53.1	9.862 2716	0.226 7551	0.226 3819
	5 305 10 01.6	1 34 51.3	2 58.9	2 34 34.8	3 39.3	9.862 2897	0.225 9983	0.225 6045
	7 308 19 45.1	1 34 52.2	2 54.8	2 41 39.2	3 24.9	9.862 2987	0.225 2003	0.224 7858
	9 311 29 30.5	1 34 53.3	2 48.5	2 48 14.1	3 09.9	9.862 2986	0.224 3609	0.223 9261
	11 314 39 18.2	+ 1 34 54.5	+ 2 40.2	- 2 54 18.3	- 2 54.2	9.862 2895	0.223 4811	0.223 0258
	13 317 49 08.5	1 34 55.9	2 30.0	2 59 50.6	2 38.0	9.862 2712	0.222 5604	0.222 0850
	15 320 59 01.8	1 34 57.5	2 17.9	3 04 50.2	2 21.4	9.862 2440	0.221 5995	0.221 1038
	17 324 08 58.5	1 34 59.2	2 04.1	3 09 16.1	2 04.3	9.862 2078	0.220 5977	0.220 0811
	19 327 18 58.9	1 35 01.1	1 48.8	3 13 07.4	1 46.9	9.862 1629	0.219 5340	0.219 0163
	21 330 29 03.2	+ 1 35 03.1	+ 1 32.2	- 3 16 23.4	- 1 29.1	9.862 1092	0.218 4679	0.217 9084
	23 333 39 11.6	1 35 05.3	1 14.5	3 19 03.5	1 11.0	9.862 0471	0.217 3379	0.216 7561
	25 336 49 24.4	1 35 07.6	0 55.8	3 21 07.2	0 52.7	9.861 9765	0.216 1631	0.215 5589
	27 339 59 41.9	1 35 09.9	0 36.5	3 22 34.1	0 34.1	9.861 8978	0.214 9431	0.214 3154
	29 343 10 04.1	1 35 12.3	+ 0 16.7	3 23 23.8	- 0 15.5	9.861 8112	0.213 6760	0.213 0249
	31 346 20 31.2	+ 1 35 14.8	- 0 03.4	- 3 23 36.2	+ 0 03.1	9.861 7170	0.212 3619	0.211 6869
Feb.	2 349 31 03.5	1 35 17.4	0 23.4	3 23 11.2	0 21.8	9.861 6154	0.210 9999	0.210 3006
	4 352 41 41.0	1 35 20.1	0 43.1	3 22 08.8	0 40.5	9.861 5067	0.209 5892	0.208 8655
	6 355 52 23.9	1 35 22.8	1 02.3	3 20 29.2	0 59.1	9.861 3913	0.208 1297	0.207 3817
	8 359 03 12.3	1 35 25.6	1 20.7	3 18 12.5	1 17.5	9.861 2695	0.206 6215	0.205 8489
	10 2 14 06.3	+ 1 35 28.4	- 1 38.1	- 3 15 19.2	+ 1 35.7	9.861 1416	0.205 0639	0.204 2666
	12 5 25 05.9	1 35 31.3	1 54.4	3 11 49.7	1 53.7	9.861 0081	0.203 4570	0.202 6359
	14 8 36 11.3	1 35 34.2	2 00.2	3 07 44.6	2 11.4	9.860 8694	0.201 8005	0.200 9531
	16 11 47 22.6	1 35 37.1	2 22.5	3 03 04.6	2 28.6	9.860 7258	0.200 0929	0.199 2196
	18 14 58 39.9	1 35 40.1	2 34.0	2 57 50.5	2 45.4	9.860 5778	0.198 3330	0.197 4331
	20 18 10 03.1	+ 1 35 43.1	- 2 43.6	- 2 52 03.1	+ 3 01.8	9.860 4258	0.196 5197	0.195 5925
	22 21 21 32.5	1 35 46.2	2 51.2	2 45 43.5	3 17.6	9.860 2704	0.194 6514	0.193 6960
	24 24 33 08.0	1 35 49.3	2 56.7	2 38 52.9	3 32.9	9.860 1119	0.192 7263	0.191 7421
	26 27 44 49.8	1 35 52.5	3 00.0	2 31 32.3	3 47.5	9.859 9509	0.190 7431	0.189 7293
	28 30 56 37.9	1 35 55.7	3 01.0	2 23 43.3	4 01.4	9.859 7878	0.188 7003	0.187 6561
Mar.	2 34 08 32.5	+ 1 35 58.9	- 2 59.8	- 2 15 26.9	+ 4 14.7	9.859 6233	0.186 5964	0.185 5212
	4 37 20 33.6	1 36 02.2	2 56.4	2 06 44.9	4 27.2	9.859 4577	0.184 4302	0.183 3234
	6 40 32 41.3	1 36 05.5	2 50.7	1 57 38.8	4 38.8	9.859 2915	0.182 2006	0.181 0618
	8 43 44 55.7	1 36 08.9	2 42.9	1 48 10.2	4 49.6	9.859 1254	0.179 9070	0.178 7360
	10 46 57 16.8	1 36 12.3	2 33.1	1 38 20.9	4 59.5	9.858 9598	0.177 5487	0.176 3452
	12 50 09 44.8	+ 1 36 15.7	- 2 21.3	- 1 28 12.7	+ 5 08.5	9.858 7952	0.175 1253	0.173 8889
	14 53 22 19.8	1 36 19.2	2 07.8	1 17 47.4	5 16.6	9.858 6322	0.172 6359	0.171 3662
	16 56 35 01.8	1 36 22.8	1 52.6	1 07 07.0	5 23.7	9.858 4713	0.170 0795	0.168 7758
	18 59 47 50.8	1 36 26.3	1 36.0	0 56 13.5	5 29.7	9.858 3130	0.167 4548	0.166 1163
	20 63 00 47.1	1 36 29.9	1 18.2	0 45 08.8	5 34.7	9.858 1577	0.164 7601	0.163 3861
	22 66 13 50.5	+ 1 36 33.5	- 0 59.4	- 0 33 55.2	+ 5 38.7	9.858 0061	0.161 9938	0.160 5827
	24 69 27 01.1	1 36 37.1	0 40.0	0 22 34.7	5 41.6	9.857 8585	0.159 1527	0.157 7038
	26 72 40 19.0	1 36 40.7	- 0 19.8	- 0 11 09.5	5 43.4	9.857 7155	0.156 2358	0.154 7482
	28 75 53 44.2	1 36 44.4	+ 0 00.5	+ 0 00 18.3	5 44.2	9.857 5775	0.153 2409	0.151 7138
	30 79 07 16.6	1 36 48.0	0 20.9	0 11 46.5	5 43.8	9.857 4450	0.150 1665	0.148 5985
Apr.	1 82 20 56.2	+ 1 36 51.6	+ 0 41.0	+ 0 23 12.9	+ 5 42.3	9.857 3183	0.147 0097	0.145 4000
	3 85 34 42.9	+ 1 36 55.1	+ 1 00.6	+ 0 34 35.2	+ 5 39.8	9.857 1980	0.143 7693	0.142 1174

VENUS.

GREENWICH MEAN NOON.

Date.	Heliocentric Longitude, Mean Equinox of Date.			Daily Motion.	Reduction to Orbit.	Heliocentric Latitude.			Daily Motion.	Logarithm of Radius Vector.	Logarithm of Distance from Earth—	
											At Date.	At Intermediate Date.
Apr. 1	82	20	56.2	+ 1 36 51.6	+ 0 41.0	+ 0	23	12.9	+ 5 42.3	9.857 3183	0.147 0097	0.145 4000
3	85	34	42.9	1 36 55.1	1 00.6	0	34	35.2	5 39.8	9.857 1980	0.143 7693	0.142 1174
5	88	48	36.7	1 36 58.6	1 19.4	0	45	51.3	5 36.1	9.857 0843	0.140 4441	0.138 7492
7	92	02	37.4	1 37 02.0	1 37.2	0	56	59.0	5 31.4	9.856 9777	0.137 0327	0.135 2945
9	95	16	44.9	1 37 05.4	1 53.8	1	07	56.1	5 25.5	9.856 8786	0.133 5344	0.131 7524
11	98	30	58.9	+ 1 37 08.6	+ 2 09.0	+ 1	18	40.5	+ 5 18.6	9.856 7872	0.129 9483	0.128 1220
13	101	45	19.2	1 37 11.7	2 22.5	1	29	10.1	5 10.7	9.856 7038	0.126 2733	0.124 4020
15	104	59	45.7	1 37 14.7	2 34.2	1	39	22.8	5 01.8	9.856 6288	0.122 5078	0.120 5907
17	108	14	17.9	1 37 17.5	2 43.9	1	49	16.6	4 51.9	9.856 5624	0.118 6503	0.116 6865
19	111	28	55.6	1 37 20.1	2 51.5	1	58	49.6	4 41.0	9.856 5047	0.114 6988	0.112 6868
21	114	43	38.3	+ 1 37 22.5	+ 2 57.0	+ 2	07	59.9	+ 4 29.2	9.856 4560	0.110 6504	0.108 5895
23	117	58	25.7	1 37 24.8	3 00.1	2	16	45.7	4 16.5	9.856 4165	0.106 5036	0.104 3925
25	121	13	17.2	1 37 26.7	3 01.0	2	25	05.3	4 03.0	9.856 3862	0.102 2557	0.100 0929
27	124	28	12.5	1 37 28.5	2 59.5	2	32	57.0	3 48.6	9.856 3653	0.097 9037	0.095 6880
29	127	43	10.9	1 37 29.9	2 55.7	2	40	19.3	3 33.5	9.856 3539	0.093 4453	0.091 1753
May 1	130	58	12.0	+ 1 37 31.1	+ 2 49.7	+ 2	47	10.7	+ 3 17.7	9.856 3519	0.088 8779	0.086 5528
3	134	13	15.1	1 37 32.0	2 41.5	2	53	29.8	3 01.3	9.856 3595	0.084 1998	0.081 8185
5	137	28	19.6	1 37 32.5	2 31.2	2	59	15.5	2 44.2	9.856 3764	0.079 4089	0.076 9708
7	140	43	24.9	1 37 32.7	2 18.9	3	04	26.6	2 26.7	9.856 4029	0.074 5041	0.072 0086
9	143	58	30.3	1 37 32.6	2 04.9	3	09	02.1	2 08.7	9.856 4387	0.069 4841	0.066 9304
11	147	13	35.1	+ 1 37 32.2	+ 1 49.3	+ 3	13	01.1	+ 1 50.2	9.856 4837	0.064 3474	0.061 7349
13	150	28	38.7	1 37 31.4	1 32.3	3	16	22.8	1 31.4	9.856 5377	0.059 0926	0.056 4203
15	153	43	40.3	1 37 30.2	1 14.0	3	19	06.7	1 12.3	9.856 6006	0.053 7177	0.050 9845
17	156	58	39.2	1 37 28.7	0 54.9	3	21	12.2	0 53.0	9.856 6722	0.048 2205	0.045 4252
19	160	13	34.7	1 37 26.8	0 35.0	3	22	38.9	0 33.6	9.856 7523	0.042 5984	0.039 7396
21	163	28	26.2	+ 1 37 24.6	+ 0 14.7	+ 3	23	26.6	+ 0 14.1	9.856 8405	0.036 8486	0.033 9249
23	166	43	12.9	1 37 22.0	- 0 05.7	3	23	35.2	- 0 05.4	9.856 9366	0.030 9682	0.027 9780
25	169	57	54.1	1 37 19.1	0 26.1	3	23	04.8	0 24.9	9.857 0402	0.024 9538	0.021 8950
27	173	12	29.2	1 37 15.9	0 46.2	3	21	55.4	0 44.3	9.857 1511	0.018 8015	0.015 6725
29	176	26	57.6	1 37 12.4	1 05.6	3	20	07.3	1 03.6	9.857 2688	0.012 5078	0.009 3068
31	179	41	18.7	+ 1 37 08.6	- 1 24.2	+ 3	17	41.0	- 1 22.6	9.857 3931	0.006 0693	0.002 7950
June 2	182	55	31.8	1 37 04.5	1 41.7	3	14	37.0	1 41.3	9.857 5233	9.999 4835	9.996 1345
4	186	09	36.5	1 37 00.1	1 58.0	3	10	56.0	1 59.6	9.857 6592	9.992 7478	9.989 3231
6	189	23	32.2	1 36 55.6	2 12.7	3	06	38.7	2 17.5	9.857 8005	9.985 8602	9.982 3587
8	192	37	18.6	1 36 50.8	2 25.7	3	01	46.1	2 35.0	9.857 9464	9.978 8184	9.975 2390
10	195	50	55.2	+ 1 36 45.8	- 2 36.8	+ 2	56	19.2	- 2 51.9	9.858 0966	9.971 6202	9.967 9616
12	199	04	21.7	1 36 40.7	2 46.0	2	50	19.0	3 08.2	9.858 2506	9.964 2628	9.960 5235
14	202	17	37.8	1 36 35.4	2 53.0	2	43	46.9	3 23.9	9.858 4079	9.956 7433	9.952 9217
16	205	30	43.2	1 36 30.0	2 57.9	2	36	44.0	3 38.9	9.858 5679	9.949 0583	9.945 1528
18	208	43	37.8	1 36 24.5	3 00.5	2	29	12.0	3 53.1	9.858 7303	9.941 2045	9.937 2130
20	211	56	21.4	+ 1 36 19.0	- 3 00.9	+ 2	21	12.1	- 4 06.6	9.858 8944	9.933 1776	9.929 0977
22	215	08	53.9	1 36 13.5	2 59.0	2	12	46.0	4 19.3	9.859 0598	9.924 9727	9.920 8020
24	218	21	15.4	1 36 08.0	2 54.8	2	03	55.4	4 31.1	9.859 2260	9.916 5848	9.912 3206
26	221	33	25.9	1 36 02.5	2 48.4	1	54	42.0	4 42.1	9.859 3923	9.908 0085	9.903 6479
28	224	45	25.5	1 35 57.1	2 40.0	1	45	07.5	4 52.2	9.859 5583	9.899 2382	9.894 7789
30	227	57	14.2	+ 1 35 51.7	- 2 29.6	+ 1	35	13.9	- 5 01.3	9.859 7235	9.890 2695	9.885 7092
July 2	231	08	52.4	+ 1 35 46.5	- 2 17.4	+ 1	25	03.0	- 5 09.5	9.859 8874	9.881 0978	9.876 4349

VENUS.									
GREENWICH MEAN NOON.									
Date.	Heliocentric Longitude, Mean Equinox of Date.	Daily Motion.	Reduction to Orbit.	Heliocentric Latitude.	Daily Motion.	Logarithm of Radius Vector.	Logarithm of Distance from Earth—		
							At Date.	At Intermediate Date.	
July	2 231 08 52.4	+ 1 35 46.5	- 2 17.4	+ 1 25 03.0	- 5 09.5	9.859 8874	9.881 0978	9.876 4349	
	4 234 20 20.3	1 35 41.4	2 03.4	1 14 36.7	5 16.7	9.860 0494	9.871 7199	9.866 9526	
	6 237 31 38.2	1 35 36.5	1 47.9	1 03 57.0	5 22.9	9.860 2090	9.862 1326	9.857 2593	
	8 240 42 46.3	1 35 31.7	1 31.1	0 53 05.9	5 28.1	9.860 3659	9.852 3325	9.847 3518	
	10 243 53 45.1	1 35 27.1	1 13.2	0 42 05.5	5 32.2	9.860 5193	9.842 3168	9.837 2270	
	12 247 04 35.0	+ 1 35 22.8	- 0 54.4	+ 0 30 57.7	- 5 35.4	9.860 6690	9.832 0819	9.826 8811	
	14 250 15 16.5	1 35 18.7	0 34.9	0 19 44.6	5 37.5	9.860 8145	9.821 6242	9.816 3109	
	16 253 25 50.0	1 35 14.9	- 0 15.0	+ 0 08 28.4	5 38.6	9.860 9552	9.810 9407	9.805 5130	
	18 256 36 16.0	1 35 11.2	+ 0 05.0	- 0 02 49.0	5 38.6	9.861 0909	9.800 0273	9.794 4833	
	20 259 46 35.1	1 35 07.9	0 25.0	0 14 05.4	5 37.6	9.861 2210	9.788 8805	9.783 2183	
	22 262 56 47.9	+ 1 35 04.9	+ 0 44.7	- 0 25 18.9	- 5 35.6	9.861 3452	9.777 4961	9.771 7134	
	24 266 06 54.7	1 35 02.1	1 03.8	0 36 27.3	5 32.6	9.861 4631	9.765 8698	9.759 9646	
	26 269 16 56.4	1 34 59.6	1 22.1	0 47 28.7	5 28.6	9.861 5744	9.753 9980	9.747 9696	
	28 272 26 53.5	1 34 57.4	1 39.4	0 58 21.1	5 23.6	9.861 6787	9.741 8797	9.735 7281	
	30 275 36 46.4	1 34 55.6	1 55.5	1 09 02.5	5 17.6	9.861 7757	9.729 5156	9.723 2424	
Aug.	1 278 46 35.9	+ 1 34 54.0	+ 2 10.1	- 1 19 31.0	- 5 10.7	9.861 8652	9.716 9095	9.710 5177	
	3 281 56 22.5	1 34 52.7	2 23.2	1 29 44.7	5 02.9	9.861 9468	9.704 0683	9.697 5623	
	5 285 06 06.7	1 34 51.6	2 34.5	1 39 41.9	4 54.1	9.862 0204	9.691 0012	9.684 3868	
	7 288 15 49.3	1 34 50.9	2 44.0	1 49 20.6	4 44.5	9.862 0857	9.677 7212	9.671 0066	
	9 291 25 30.6	1 34 50.4	2 51.4	1 58 39.2	4 34.0	9.862 1425	9.664 2456	9.657 4407	
	11 294 35 11.2	+ 1 34 50.2	+ 2 56.8	- 2 07 36.0	- 4 22.7	9.862 1906	9.650 5953	9.643 7127	
	13 297 44 51.7	1 34 50.3	3 00.0	2 16 09.4	4 10.6	9.862 2300	9.636 7968	9.629 8521	
	15 300 54 32.6	1 34 50.6	3 01.0	2 24 18.0	3 57.8	9.862 2605	9.622 8831	9.615 8950	
	17 304 04 14.4	1 34 51.1	2 59.8	2 32 00.1	3 44.2	9.862 2820	9.608 8935	9.601 8847	
	19 307 13 57.4	1 34 51.9	2 56.4	2 39 14.5	3 30.0	9.862 2945	9.594 8754	9.587 8727	
	21 310 23 42.2	+ 1 34 52.9	+ 2 50.9	- 2 45 59.8	- 3 15.2	9.862 2979	9.580 8848	9.573 9206	
	23 313 33 29.1	1 34 54.1	2 43.3	2 52 14.8	2 59.7	9.862 2922	9.566 9900	9.560 1033	
	25 316 43 18.5	1 34 55.4	2 33.8	2 57 58.4	2 43.7	9.862 2775	9.553 2724	9.546 5102	
	27 319 53 10.9	1 34 57.0	2 22.3	3 03 09.5	2 27.3	9.862 2537	9.539 8306	9.533 2486	
	29 323 03 06.5	1 34 58.6	2 09.1	3 07 47.2	2 10.3	9.862 2210	9.526 7800	9.520 4419	
	31 326 13 05.6	+ 1 35 00.5	+ 1 54.3	- 3 11 50.6	- 1 53.0	9.862 1795	9.514 2525	9.508 2307	
Sept.	2 329 23 08.5	1 35 02.5	1 38.1	3 15 19.0	1 35.3	9.862 1293	9.502 3960	9.496 7686	
	4 332 33 15.5	1 35 04.5	1 20.7	3 18 11.7	1 17.3	9.862 0705	9.491 3692	9.486 2196	
	6 335 43 26.8	1 35 06.7	1 02.4	3 20 28.2	0 59.1	9.862 0034	9.481 3409	9.476 7542	
	8 338 53 42.6	1 35 09.1	0 43.3	3 22 07.9	0 40.6	9.861 9280	9.472 4804	9.468 5400	
	10 342 04 03.1	+ 1 35 11.5	+ 0 23.6	- 3 23 10.6	- 0 22.0	9.861 8448	9.464 9523	9.461 7358	
	12 345 14 28.5	1 35 13.9	+ 0 03.6	3 23 36.0	- 0 03.4	9.861 7538	9.458 9071	9.456 4813	
	14 348 24 58.9	1 35 16.5	- 0 16.4	3 23 24.0	+ 0 15.3	9.861 6553	9.454 4710	9.452 8873	
	16 351 35 34.5	1 35 19.1	0 36.2	3 22 34.6	0 34.0	9.861 5498	9.451 7377	9.451 0283	
	18 354 46 15.4	1 35 21.8	0 55.6	3 21 07.9	0 52.6	9.861 4374	9.450 7617	9.450 9387	
	20 357 57 01.7	+ 1 35 24.5	- 1 14.3	- 3 19 04.1	+ 1 11.1	9.861 3185	9.451 5570	9.452 6119	
	22 1 07 53.5	1 35 27.3	1 32.2	3 16 23.5	1 29.4	9.861 1935	9.454 0963	9.456 0008	
	24 4 18 50.9	1 35 30.1	1 48.9	3 13 06.5	1 47.5	9.861 0628	9.458 3140	9.461 0225	
	26 7 29 54.1	1 35 33.0	2 04.2	3 09 13.7	2 05.2	9.860 9266	9.464 1109	9.467 5624	
	28 10 41 03.0	1 35 35.9	2 18.1	3 04 45.8	2 22.6	9.860 7855	9.471 3592	9.475 4822	
	30 13 52 17.7	+ 1 35 38.9	- 2 30.2	- 2 59 43.5	+ 2 39.6	9.860 6399	9.479 9112	9.484 6256	
	Oct. 2 17 03 38.4	+ 1 35 41.8	- 2 40.5	- 2 54 07.6	+ 2 56.2	9.860 4902	9.489 6049	9.494 8285	

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GREENWICH MEAN NOON.

Date.	Heliocentric Longitude, Mean Equinox of Date.			Daily Motion.	Reduction to Orbit.	Heliocentric Latitude.			Daily Motion.	Logarithm of Radius Vector.	Logarithm of Distance from Earth—	
											At Date.	At Interme- diate Date.
	°	'	"	°	'	"	°	'	"			
Oct. 2	17	03	38.4	+ 1 35 41.8	- 2 40.5	- 2 54 07.6	+ 2 56.2	9.860 4902	9.489 6049	9.494 8285		
4	20	15	05.1	1 35 44.9	2 48.8	2 47 59.1	3 12.2	9.860 3369	9.500 2757	9.505 9261		
6	23	26	38.0	1 35 48.0	2 55.0	2 41 19.1	3 27.6	9.860 1803	9.511 7599	9.517 7580		
8	26	38	17.0	1 35 51.1	2 59.1	2 34 08.9	3 42.5	9.860 0211	9.523 9021	9.530 1744		
10	29	50	02.2	1 35 54.2	3 00.9	2 26 29.6	3 56.7	9.859 8597	9.536 5581	9.543 0371		
12	33	01	53.8	+ 1 35 57.4	- 3 00.5	- 2 18 22.6	+ 4 10.2	9.859 6965	9.549 5964	9.556 2222		
14	36	13	51.9	1 36 00.6	2 57.8	2 09 49.4	4 22.9	9.859 5321	9.562 9013	9.569 6218		
16	39	25	56.4	1 36 03.9	2 52.9	2 00 51.4	4 34.8	9.859 3670	9.576 3727	9.583 1440		
18	42	38	07.6	1 36 07.2	2 45.9	1 51 30.5	4 45.9	9.859 2017	9.589 9266	9.596 7122		
20	45	50	25.4	1 36 10.6	2 36.7	1 41 48.3	4 56.1	9.859 0367	9.603 4938	9.610 2645		
22	49	02	50.0	+ 1 36 14.0	- 2 25.6	- 1 31 46.5	+ 5 05.5	9.858 8726	9.617 0185	9.623 7506		
24	52	15	21.5	1 36 17.5	2 12.7	1 21 27.0	5 13.9	9.858 7097	9.630 4561	9.637 1309		
26	55	28	00.0	1 36 21.0	1 58.1	1 10 51.7	5 21.3	9.858 5487	9.643 7713	9.650 3736		
28	58	40	45.4	1 36 24.5	1 42.0	1 00 02.6	5 27.7	9.858 3901	9.656 9349	9.663 4525		
30	61	53	38.0	1 36 28.1	1 24.6	0 49 01.7	5 33.0	9.858 2343	9.669 9241	9.676 3474		
Nov. 1	65	06	37.7	+ 1 36 31.6	- 1 06.1	- 0 37 51.0	+ 5 37.4	9.858 0819	9.682 7209	9.689 0425		
3	68	19	44.5	1 36 35.2	0 46.8	0 26 32.7	5 40.7	9.857 9335	9.695 3111	9.701 5252		
5	71	32	58.6	1 36 38.9	0 26.9	0 15 08.9	5 42.9	9.857 7891	9.707 6839	9.713 7860		
7	74	46	19.9	1 36 42.5	- 0 06.6	- 0 03 41.8	5 44.0	9.857 6496	9.719 8307	9.725 8171		
9	77	59	48.5	1 36 46.1	+ 0 13.8	+ 0 07 46.4	5 44.0	9.857 5153	9.731 7446	9.737 6127		
11	81	13	24.3	+ 1 36 49.7	+ 0 34.0	+ 0 19 13.6	+ 5 42.9	9.857 3867	9.743 4209	9.749 1690		
13	84	27	07.2	1 36 53.2	0 53.8	0 30 37.5	5 40.8	9.857 2642	9.754 8570	9.760 4846		
15	87	40	57.2	1 36 56.7	1 12.9	0 41 55.9	5 37.5	9.857 1482	9.766 0522	9.771 5599		
17	90	54	54.1	1 37 00.2	1 31.1	0 53 06.7	5 33.1	9.857 0390	9.777 0082	9.782 3976		
19	94	08	57.9	1 37 03.6	1 48.2	1 04 07.7	5 27.7	9.856 9370	9.787 7286	9.793 0016		
21	97	23	08.4	+ 1 37 06.8	+ 2 03.9	+ 1 14 56.7	+ 5 21.2	9.856 8426	9.798 2173	9.803 3765		
23	100	37	25.2	1 37 10.0	2 18.0	1 25 31.6	5 13.6	9.856 7560	9.808 4798	9.813 5281		
25	103	51	48.2	1 37 13.0	2 30.3	1 35 50.4	5 05.0	9.856 6776	9.818 5218	9.823 4616		
27	107	06	17.2	1 37 15.9	2 40.7	1 45 51.0	4 55.4	9.856 6076	9.828 3482	9.833 1825		
29	110	20	51.7	1 37 18.6	2 49.1	1 55 31.5	4 44.9	9.856 5462	9.837 9649	9.842 6962		
Dec. 1	113	35	31.5	+ 1 37 21.1	+ 2 55.3	+ 2 04 49.9	+ 4 33.4	9.856 4937	9.847 3768	9.852 0073		
3	116	50	16.1	1 37 23.4	2 59.3	2 13 44.5	4 21.0	9.856 4502	9.856 5884	9.861 1207		
5	120	05	05.1	1 37 25.8	3 01.0	2 22 13.4	4 07.8	9.856 4158	9.865 6045	9.870 0405		
7	123	19	58.1	1 37 27.4	3 00.3	2 30 15.0	3 53.8	9.856 3907	9.874 4287	9.878 7697		
9	126	34	54.5	1 37 28.9	2 57.3	2 37 47.8	3 38.9	9.856 3750	9.883 0639	9.887 3114		
11	129	49	53.7	+ 1 37 30.2	+ 2 52.1	+ 2 44 50.1	+ 3 23.3	9.856 3687	9.891 5131	9.895 6692		
13	133	04	55.2	1 37 31.2	2 44.6	2 51 20.7	3 07.1	9.856 3718	9.899 7804	9.903 8470		
15	136	19	58.5	1 37 32.0	2 35.0	2 57 18.3	2 50.3	9.856 3843	9.907 8697	9.911 8488		
17	139	35	02.8	1 37 32.3	2 23.4	3 02 41.6	2 32.9	9.856 4062	9.915 7851	9.919 6793		
19	142	50	07.5	1 37 32.3	2 10.0	3 07 29.6	2 15.0	9.856 4374	9.923 5321	9.927 3441		
21	146	05	11.9	+ 1 37 32.0	+ 1 55.0	+ 3 11 41.5	+ 1 56.7	9.856 4778	9.931 1158	9.934 8480		
23	149	20	15.4	1 37 31.4	1 38.4	3 15 16.4	1 38.1	9.856 5273	9.938 5411	9.942 1960		
25	152	35	17.3	1 37 30.4	1 20.6	3 18 13.7	1 19.0	9.856 5858	9.945 8129	9.949 3928		
27	155	50	16.8	1 37 29.0	1 01.7	3 20 32.7	0 59.8	9.856 6529	9.952 9360	9.956 4431		
29	159	05	13.2	1 37 27.3	0 42.1	3 22 13.0	0 40.4	9.856 7285	9.959 9148	9.963 3516		
31	162	20	05.9	+ 1 37 25.3	+ 0 21.9	+ 3 23 14.5	+ 0 20.9	9.856 8124	9.966 7539	9.970 1222		
33	165	34	54.2	+ 1 37 22.9	+ 0 01.5	+ 3 23 36.8	+ 0 01.3	9.856 9043	9.973 4569			

MARS.								
GREENWICH MEAN NOON.								
Date.	Heliocentric Longitude, Mean Equinox of Date.	Daily Motion.	Reduction to Orbit.	Heliocentric Latitude.	Daily Motion.	Logarithm of Radius Vector.	Logarithm of Distance from Earth—	
							At Date.	At Interme- diate Date.
Jan. 1	149 09 47.5	+ 26 13.76	- 19.0	+ 1 49 12.7	- 9.12	0.221 4384	0.102 4380	0.099 0417
3	150 02 14.4	26 13.35	20.5	1 48 53.7	9.89	0.221 4941	0.095 6197	0.092 1718
5	150 54 40.8	26 13.03	22.0	1 48 33.1	10.64	0.221 5394	0.088 6980	0.085 1984
7	151 47 06.5	26 12.77	23.5	1 48 11.1	11.39	0.221 5743	0.081 6731	0.078 1225
9	152 39 31.9	26 12.57	25.0	1 47 47.5	12.14	0.221 5989	0.074 5466	0.070 9455
11	153 31 56.9	+ 26 12.45	- 26.4	+ 1 47 22.5	- 12.90	0.221 6131	0.067 3194	0.063 6683
13	154 24 21.7	26 12.42	27.8	1 46 55.9	13.64	0.221 6170	0.059 9921	0.056 2911
15	155 16 46.6	26 12.45	29.2	1 46 27.9	14.39	0.221 6104	0.052 5655	0.048 8154
17	156 09 11.6	26 12.56	30.6	1 45 58.4	15.13	0.221 5936	0.045 0408	0.041 2423
19	157 01 36.9	26 12.74	31.9	1 45 27.4	15.86	0.221 5664	0.037 4203	0.033 5750
21	157 54 02.6	+ 26 13.00	- 33.2	+ 1 44 54.9	- 16.60	0.221 5288	0.029 7071	0.025 8170
23	158 46 29.0	26 13.33	34.5	1 44 20.9	17.34	0.221 4809	0.021 9055	0.017 9731
25	159 38 56.0	26 13.74	35.8	1 43 45.5	18.07	0.221 4226	0.014 0208	0.010 0492
27	160 31 23.9	26 14.21	37.0	1 43 08.6	18.79	0.221 3540	0.006 0593	0.002 0519
29	161 23 52.9	26 14.76	38.1	1 42 30.3	19.52	0.221 2751	9.998 0280	9.993 9887
31	162 16 23.0	+ 26 15.39	- 39.3	+ 1 41 50.6	- 20.24	0.221 1858	9.989 9350	9.985 8681
Feb. 2	163 08 54.5	26 16.09	40.4	1 41 09.4	20.96	0.221 0863	9.981 7892	9.977 6995
4	164 01 27.5	26 16.87	41.5	1 40 26.7	21.68	0.220 9764	9.973 6004	9.969 4930
6	164 54 02.1	26 17.73	42.5	1 39 42.6	22.39	0.220 8562	9.965 3788	9.961 2590
8	165 46 38.5	26 18.65	43.5	1 38 57.1	23.10	0.220 7257	9.957 1352	9.953 0089
10	166 39 16.8	+ 26 19.65	- 44.4	+ 1 38 10.2	- 23.80	0.220 5850	9.948 8816	9.944 7546
12	167 31 57.1	26 20.73	45.3	1 37 21.9	24.52	0.220 4341	9.940 6298	9.936 5090
14	168 24 39.8	26 21.89	46.2	1 36 32.1	25.22	0.220 2729	9.932 3943	9.928 2874
16	169 17 24.8	26 23.11	47.0	1 35 41.0	25.92	0.220 1015	9.924 1909	9.920 1072
18	170 10 12.3	26 24.41	47.8	1 34 48.5	26.61	0.219 9199	9.916 0389	9.911 9882
20	171 03 02.5	+ 26 25.79	- 48.5	+ 1 33 54.5	- 27.30	0.219 7282	9.907 9584	9.903 9525
22	171 55 55.5	26 27.24	49.2	1 32 59.2	27.99	0.219 5263	9.899 9734	9.896 0244
24	172 48 51.5	26 28.76	49.9	1 32 02.5	28.68	0.219 3143	9.892 1090	9.888 2302
26	173 41 50.6	26 30.36	50.5	1 31 04.5	29.36	0.219 0922	9.884 3920	9.880 5980
28	174 34 53.0	26 32.04	51.0	1 30 05.1	30.04	0.218 8600	9.876 8519	9.873 1575
Mar. 2	175 27 58.8	+ 26 33.79	- 51.5	+ 1 29 04.3	- 30.71	0.218 6178	9.869 5188	9.865 9396
4	176 21 08.2	26 35.62	52.0	1 28 02.2	31.38	0.218 3655	9.862 4238	9.858 9753
6	177 14 21.4	26 37.52	52.4	1 26 58.8	32.05	0.218 1033	9.855 5982	9.852 2964
8	178 07 38.4	26 39.51	52.7	1 25 54.0	32.72	0.217 8312	9.849 0737	9.845 9341
10	179 00 59.5	26 41.55	53.0	1 24 47.9	33.38	0.217 5491	9.842 8813	9.839 9191
12	179 54 24.7	+ 26 43.69	- 53.3	+ 1 23 40.5	- 34.03	0.217 2572	9.837 0516	9.834 2827
14	180 47 54.3	26 45.89	53.5	1 22 31.8	34.68	0.216 9554	9.831 6162	9.829 0558
16	181 41 28.3	26 48.16	53.6	1 21 21.8	35.33	0.216 6438	9.826 6055	9.824 2692
18	182 35 07.0	26 50.52	53.7	1 20 10.5	35.97	0.216 3225	9.822 0505	9.819 9531
20	183 28 50.5	26 52.95	53.8	1 18 57.9	36.61	0.215 9914	9.817 9803	9.816 1355
22	184 22 38.9	+ 26 55.46	- 53.8	+ 1 17 44.0	- 37.24	0.215 6507	9.814 4217	9.812 8422
24	185 16 32.4	26 58.04	53.7	1 16 28.9	37.87	0.215 3003	9.811 3991	9.810 0951
26	186 10 31.1	27 00.69	53.6	1 15 12.5	38.50	0.214 9404	9.808 9322	9.807 9128
28	187 04 35.2	27 03.42	53.4	1 13 54.9	39.11	0.214 5710	9.807 0376	9.806 3081
30	187 58 44.8	27 06.23	53.2	1 12 36.1	39.73	0.214 1920	9.805 7245	9.805 2877
Apr. 1	188 53 00.2	+ 27 09.11	- 52.9	+ 1 11 16.0	- 40.34	0.213 8037	9.804 9973	9.804 8534
3	189 47 21.4	+ 27 12.07	- 52.6	+ 1 09 54.7	- 40.94	0.213 4060	9.804 8547	9.805 0003

MARS.

GREENWICH MEAN NOON.

Date.	Heliocentric Longitude, Mean Equinox of Date.			Daily Motion.	Reduction to Orbit.	Heliocentric Latitude.			Daily Motion.	Logarithm of Radius Vector.	Logarithm of Distance from Earth—			
											At Date.	At Intermediate Date.		
Apr.	1	188	53	00.2	+ 27	09.11	— 52.9	+ 1	11	16.0	— 40.34	0.213 8037	9.804 9973	9.804 8534
	3	189	47	21.4	27	12.07	52.6	1	09	54.7	40.94	0.213 4060	9.804 8547	9.805 0003
	5	190	41	48.5	27	15.11	52.2	1	08	32.2	41.54	0.212 9989	9.805 2884	9.805 7177
	7	191	36	21.9	27	18.22	51.8	1	07	08.5	42.13	0.212 5826	9.806 2858	9.806 9907
	9	192	31	01.5	27	21.41	51.3	1	05	43.7	42.72	0.212 1572	9.807 8297	9.808 8002
	11	193	25	47.6	+ 27	24.66	— 50.8	+ 1	04	17.6	— 43.30	0.211 7226	9.809 8993	9.811 1243
	13	194	20	40.2	27	28.00	50.2	1	02	50.4	43.87	0.211 2789	9.812 4719	9.813 9392
	15	195	15	39.6	27	31.42	49.6	1	01	22.1	44.44	0.210 8263	9.815 5226	9.817 2190
	17	196	10	46.0	27	34.91	48.9	0	59	52.7	45.01	0.210 3647	9.819 0247	9.820 9361
	19	197	05	59.3	27	38.47	48.1	0	58	22.1	45.56	0.209 8943	9.822 9494	9.825 0609
	21	198	01	19.9	+ 27	42.10	— 47.3	+ 0	56	50.4	— 46.11	0.209 4151	9.827 2667	9.829 5628
	23	198	56	47.8	27	45.81	46.5	0	55	17.6	46.65	0.208 9272	9.831 9453	9.834 4100
	25	199	52	23.3	27	49.60	45.6	0	53	43.8	47.19	0.208 4307	9.836 9531	9.839 5707
	27	200	48	06.3	27	53.47	44.6	0	52	08.9	47.71	0.207 9257	9.842 2585	9.845 0125
	29	201	43	57.2	27	57.40	43.6	0	50	32.9	48.23	0.207 4122	9.847 8286	9.850 7026
May	1	202	39	56.0	+ 28	01.42	— 42.6	+ 0	48	55.9	— 48.75	0.206 8904	9.853 6306	9.856 6086
	3	203	36	03.0	28	05.51	41.5	0	47	17.9	49.25	0.206 3603	9.859 6329	9.862 6998
	5	204	32	18.1	28	09.66	40.3	0	45	38.9	49.74	0.205 8220	9.865 8059	9.868 9473
	7	205	28	41.7	28	13.89	39.1	0	43	58.9	50.23	0.205 2756	9.872 1213	9.875 3249
	9	206	25	13.8	28	18.21	37.9	0	42	18.0	50.71	0.204 7213	9.878 5551	9.881 8089
	11	207	21	54.6	+ 28	22.59	— 36.6	+ 0	40	36.1	— 51.18	0.204 1591	9.885 0840	9.888 3780
	13	208	18	44.2	28	27.04	35.3	0	38	53.2	51.64	0.203 5891	9.891 6886	9.895 0136
	15	209	15	42.8	28	31.57	33.9	0	37	09.5	52.10	0.203 0114	9.898 3409	9.901 6982
	17	210	12	50.6	28	36.16	32.5	0	35	24.8	52.54	0.202 4262	9.905 0538	9.908 4159
	19	211	10	07.6	28	40.83	31.1	0	33	39.3	52.97	0.201 8336	9.911 7827	9.915 1525
	21	212	07	34.0	+ 28	45.58	— 29.6	+ 0	31	53.0	— 53.39	0.201 2336	9.918 5237	9.921 8947
	23	213	05	09.9	28	50.39	28.1	0	30	05.8	53.80	0.200 6264	9.925 2641	9.928 6302
	25	214	02	55.6	28	55.28	26.5	0	28	17.8	54.20	0.200 0121	9.931 9918	9.935 3474
	27	215	00	51.1	29	00.24	24.9	0	26	29.0	54.59	0.199 3909	9.938 6956	9.942 0350
	29	215	58	56.6	29	05.27	23.3	0	24	39.4	54.96	0.198 7629	9.945 3644	9.948 6826
June	31	216	57	12.2	+ 29	10.36	— 21.6	+ 0	22	49.1	— 55.33	0.198 1282	9.951 9886	9.955 2810
	2	217	55	38.1	29	15.53	19.9	0	20	58.1	55.69	0.197 4869	9.958 5592	9.961 8222
	4	218	54	14.4	29	20.76	18.2	0	19	06.3	56.03	0.196 8393	9.965 0695	9.968 3001
	6	219	53	01.2	29	26.06	16.5	0	17	13.9	56.35	0.196 1854	9.971 5138	9.974 7100
	8	220	51	58.7	29	31.42	14.7	0	15	20.9	56.67	0.195 5253	9.977 8884	9.981 0484
	10	221	51	07.0	+ 29	36.85	— 12.9	+ 0	13	27.2	— 56.97	0.194 8593	9.984 1899	9.987 3126
	12	222	50	26.2	29	42.35	11.1	0	11	33.0	57.26	0.194 1875	9.990 4160	9.993 4999
	14	223	49	56.4	29	47.91	9.3	0	09	38.2	57.53	0.193 5101	9.996 5643	9.999 6092
	16	224	49	37.8	29	53.53	7.5	0	07	42.9	57.79	0.192 8272	0.002 6342	0.005 6390
	18	225	49	30.6	29	59.22	5.6	0	05	47.0	58.04	0.192 1389	0.008 6239	0.011 5883
	20	226	49	34.8	+ 30	04.97	— 3.7	+ 0	03	50.7	— 58.27	0.191 4456	0.014 5322	0.017 4553
	22	227	49	50.5	30	10.78	— 1.8	+ 0	01	53.9	58.48	0.190 7472	0.020 5577	0.023 2394
	24	228	50	17.9	30	16.65	0.0	— 0	00	03.2	58.68	0.190 0441	0.026 0998	0.028 9385
	26	229	50	57.2	30	22.58	+ 1.9	0	02	00.8	58.86	0.189 3364	0.031 7555	0.034 5508
	28	230	51	48.3	30	28.57	3.8	0	03	58.7	59.03	0.188 6243	0.037 3241	0.040 0750
July	30	231	52	51.5	+ 30	34.61	+ 5.7	— 0	05	56.9	— 59.18	0.187 9080	0.042 8037	0.045 5100
	2	232	54	06.8	+ 30	40.71	+ 7.6	— 0	07	55.4	— 59.31	0.187 1877	0.048 1940	0.050 8559

MARS.								
GREENWICH MEAN NOON.								
Date.	Heliocentric Longitude, Mean Equinox of Date.	Daily Motion.	Reduction to Orbit.	Heliocentric Latitude.	Daily Motion.	Logarithm of Radius Vector.	Logarithm of Distance from Earth—	
							At Date.	At Interme- diate Date
July 2	232 54 06.8	+ 30 40.71	+ 7.6	- 0 07 55.4	- 59.31	0.187 1877	0.048 1940	0.050 8559
4	233 55 34.4	30 46.86	9.5	0 09 54.2	59.42	0.186 4635	0.053 4958	0.056 1135
6	234 57 14.3	30 53.07	11.4	0 11 53.1	59.51	0.185 7358	0.058 7094	0.061 2837
8	235 59 06.7	30 59.33	13.3	0 13 52.2	59.58	0.185 0046	0.063 8365	0.066 3682
10	237 01 11.7	31 05.63	15.2	0 15 51.5	59.64	0.184 2703	0.068 8788	0.071 3685
12	238 03 29.3	+ 31 11.98	+ 17.1	- 0 17 50.8	- 59.68	0.183 5330	0.073 8374	0.076 2857
14	239 05 59.7	31 18.38	18.9	0 19 50.2	59.70	0.182 7930	0.078 7138	0.081 1219
16	240 08 42.8	31 24.82	20.7	0 21 49.6	59.69	0.182 0504	0.083 5102	0.085 8787
18	241 11 39.0	31 31.32	22.5	0 23 49.0	59.67	0.181 3056	0.088 2276	0.090 5570
20	242 14 48.2	31 37.85	24.3	0 25 48.3	59.63	0.180 5588	0.092 8670	0.095 1577
22	243 18 10.4	+ 31 44.42	+ 26.1	- 0 27 47.5	- 59.56	0.179 8102	0.097 4292	0.099 6815
24	244 21 45.9	31 51.03	27.8	0 29 46.5	59.47	0.179 0600	0.101 9145	0.104 1282
26	245 25 34.6	31 57.67	29.5	0 31 45.4	59.35	0.178 3086	0.106 3228	0.108 4983
28	246 29 36.6	32 04.35	31.1	0 33 43.9	59.21	0.177 5561	0.110 6547	0.112 7920
30	247 33 52.0	32 11.06	32.7	0 35 42.2	59.06	0.176 8028	0.114 9105	0.117 0104
Aug. 1	248 38 20.9	+ 32 17.79	+ 34.3	- 0 37 40.2	- 58.88	0.176 0490	0.119 0919	0.121 1549
3	249 43 03.2	32 24.55	35.9	0 39 37.7	58.67	0.175 2949	0.123 1999	0.125 2271
5	250 47 59.1	32 31.34	37.4	0 41 34.9	58.44	0.174 5409	0.127 2368	0.129 2292
7	251 53 08.6	32 38.15	38.8	0 43 31.5	58.18	0.173 7872	0.131 2046	0.133 1631
9	252 58 31.8	32 44.99	40.2	0 45 27.6	57.90	0.173 0341	0.135 1051	0.137 0308
11	254 04 08.6	+ 32 51.84	+ 41.5	- 0 47 23.1	- 57.59	0.172 2818	0.138 9403	0.140 8341
13	255 09 59.1	32 58.70	42.8	0 49 18.0	57.26	0.171 5307	0.142 7122	0.144 5748
15	256 16 03.4	33 05.57	44.0	0 51 12.2	56.90	0.170 7811	0.146 4221	0.148 2544
17	257 22 21.4	33 12.45	45.2	0 53 05.6	56.51	0.170 0332	0.150 0717	0.151 8743
19	258 28 53.2	33 19.34	46.3	0 54 58.2	56.10	0.169 2874	0.153 6621	0.155 4353
21	259 35 38.8	+ 33 26.23	+ 47.3	- 0 56 50.0	- 55.66	0.168 5440	0.157 1939	0.158 9378
23	260 42 38.2	33 33.12	48.3	0 58 40.9	55.19	0.167 8032	0.160 6672	0.162 3821
25	261 49 51.3	33 40.01	49.2	1 00 30.8	54.70	0.167 0654	0.164 0825	0.165 7685
27	262 57 18.2	33 46.90	50.0	1 02 19.7	54.17	0.166 3308	0.167 4404	0.169 0982
29	264 04 58.9	33 53.76	50.7	1 04 07.5	53.62	0.165 5999	0.170 7422	0.172 3724
31	265 12 53.3	+ 34 00.62	+ 51.4	- 1 05 54.1	- 53.03	0.164 8730	0.173 9891	0.175 5925
Sept. 2	266 21 01.4	34 07.46	52.0	1 07 39.6	52.42	0.164 1502	0.177 1828	0.178 7604
4	267 29 23.2	34 14.29	52.5	1 09 23.8	51.78	0.163 4321	0.180 3253	0.181 8777
6	268 37 58.6	34 21.09	52.9	1 11 06.7	51.11	0.162 7189	0.183 4179	0.184 9461
8	269 46 47.5	34 27.86	53.3	1 12 48.3	50.41	0.162 0109	0.186 4625	0.187 9675
10	270 55 50.0	+ 34 34.60	+ 53.5	- 1 14 28.4	- 49.68	0.161 3086	0.189 4612	0.190 9436
12	272 05 05.9	34 41.31	53.7	1 16 07.0	48.93	0.160 6121	0.192 4150	0.193 8757
14	273 14 35.2	34 47.98	53.8	1 17 44.1	48.14	0.159 9219	0.195 3257	0.196 7652
16	274 24 17.8	34 54.60	53.8	1 19 19.6	47.32	0.159 2382	0.198 1941	0.199 6126
18	275 34 13.6	35 01.18	53.7	1 20 53.4	46.47	0.158 5615	0.201 0207	0.202 4186
20	276 44 22.5	+ 35 07.71	+ 53.5	- 1 22 25.5	- 45.60	0.157 8921	0.203 8062	0.205 1834
22	277 54 44.5	35 14.20	53.2	1 23 55.8	44.69	0.157 2302	0.206 5504	0.207 9073
24	279 05 19.3	35 20.62	52.9	1 25 24.2	43.75	0.156 5764	0.209 2542	0.210 5999
26	280 16 06.9	35 26.97	52.4	1 26 50.7	42.78	0.155 9308	0.211 9177	0.213 2350
28	281 27 07.2	35 33.27	51.9	1 28 15.3	41.79	0.155 2939	0.214 5427	0.215 8410
30	282 38 20.0	+ 35 39.48	+ 51.3	- 1 29 37.9	- 40.76	0.154 6659	0.217 1300	0.218 4100
Oct. 2	283 49 45.1	+ 35 45.63	+ 50.5	- 1 30 58.4	- 39.71	0.154 0473	0.219 6812	0.220 9437

MARS.

GREENWICH MEAN NOON.

Date.	Heliocentric Longitude, Mean Equinox of Date.	Daily Motion.	Reduction to Orbit.	Heliocentric Latitude.	Daily Motion.	Logarithm of Radius Vector.	Logarithm of Distance from Earth—	
							At Date.	At Interme- diate Date.
Oct. 2	283 49 45.1	+ 35 45.63	+ 50.5	- 1 30 58.4	- 39.71	0.154 0473	0.219 6812	0.220 9437
4	285 01 22.4	35 51.71	49.7	1 32 16.7	38.62	0.153 4383	0.222 1977	0.223 4434
6	286 13 11.9	35 57.70	48.8	1 33 32.9	37.52	0.152 8393	0.224 6811	0.225 9108
8	287 25 13.2	36 03.59	47.8	1 34 46.8	36.38	0.152 2506	0.227 1328	0.228 3471
10	288 37 26.2	36 09.39	46.7	1 35 58.4	35.21	0.151 6726	0.229 5540	0.230 7539
12	289 49 50.7	+ 36 15.11	+ 45.6	- 1 37 07.7	- 34.02	0.151 1055	0.231 9466	0.233 1321
14	291 02 26.6	36 20.73	44.3	1 38 14.5	32.79	0.150 5498	0.234 3106	0.235 4822
16	292 15 13.6	36 26.24	43.0	1 39 18.8	31.54	0.150 0057	0.236 6470	0.237 8049
18	293 28 11.5	36 31.63	41.6	1 40 20.7	30.28	0.149 4736	0.238 9560	0.240 1002
20	294 41 20.1	36 36.92	40.1	1 41 19.9	28.98	0.148 9537	0.241 2376	0.242 3683
22	295 54 39.1	+ 36 42.10	+ 38.6	- 1 42 16.6	- 27.65	0.148 4464	0.243 4923	0.244 6097
24	297 08 08.4	36 47.16	36.9	1 43 10.6	26.31	0.147 9521	0.245 7204	0.246 8245
26	298 21 47.7	36 52.09	35.2	1 44 01.8	24.95	0.147 4709	0.247 9222	0.249 0136
28	299 35 36.7	36 56.89	33.4	1 44 50.3	23.55	0.147 0032	0.250 0989	0.251 1782
30	300 49 35.2	37 01.57	31.6	1 45 36.0	22.10	0.146 5494	0.252 2517	0.253 3194
Nov. 1	302 03 42.9	+ 37 06.11	+ 29.7	- 1 46 18.9	- 20.70	0.146 1096	0.254 3815	0.255 4381
3	303 17 59.5	37 10.49	27.7	1 46 58.9	19.25	0.145 6841	0.256 4894	0.257 5356
5	304 32 24.7	37 14.73	25.7	1 47 35.9	17.78	0.145 2733	0.258 5769	0.259 6134
7	305 46 58.3	37 18.83	23.6	1 48 10.0	16.29	0.144 8773	0.260 6452	0.261 6726
9	307 01 40.0	37 22.79	21.5	1 48 41.1	14.78	0.144 4965	0.262 6952	0.263 7135
11	308 16 29.4	+ 37 26.59	+ 19.3	- 1 49 09.1	- 13.25	0.144 1311	0.264 7275	0.265 7373
13	309 31 26.2	37 30.23	17.1	1 49 34.1	11.72	0.143 7812	0.266 7428	0.267 7441
15	310 46 30.2	37 33.70	14.9	1 49 56.0	10.17	0.143 4473	0.268 7411	0.269 7338
17	312 01 41.0	37 37.03	12.6	1 50 14.8	8.60	0.143 1294	0.270 7223	0.271 7065
19	313 16 58.2	37 40.18	10.3	1 50 30.4	7.03	0.142 8278	0.272 6865	0.273 6622
21	314 32 21.6	+ 37 43.15	+ 8.0	- 1 50 42.9	- 5.44	0.142 5427	0.274 6337	0.275 6009
23	315 47 50.7	37 45.96	5.7	1 50 52.2	3.84	0.142 2743	0.276 5640	0.277 5231
25	317 03 25.3	37 48.60	3.3	1 50 58.3	2.24	0.142 0228	0.278 4783	0.279 4295
27	318 19 05.0	37 51.04	+ 0.9	1 51 01.2	- 0.63	0.141 7883	0.280 3769	0.281 3207
29	319 34 49.4	37 53.32	- 1.4	1 51 00.8	+ 0.98	0.141 5710	0.282 2609	0.283 1975
Dec. 1	320 50 38.2	+ 37 55.41	- 3.8	- 1 50 57.2	+ 2.60	0.141 3711	0.284 1307	0.285 0607
3	322 06 30.9	37 57.31	6.2	1 50 50.4	4.22	0.141 1887	0.285 9876	0.286 9114
5	323 22 27.3	37 59.04	8.5	1 50 40.4	5.84	0.141 0238	0.287 8322	0.288 7503
7	324 38 27.0	38 00.58	10.9	1 50 27.0	7.47	0.140 8767	0.289 6657	0.290 5786
9	325 54 29.6	38 01.92	13.2	1 50 10.5	9.09	0.140 7475	0.291 4889	0.292 3964
11	327 10 34.6	+ 38 03.08	- 15.5	- 1 49 50.7	+ 10.71	0.140 6361	0.293 3013	0.294 2037
13	328 26 41.8	38 04.05	17.7	1 49 27.6	12.33	0.140 5428	0.295 1034	0.296 0004
15	329 42 50.7	38 04.83	20.0	1 49 01.3	13.94	0.140 4675	0.296 8947	0.297 7863
17	330 59 01.0	38 05.42	22.2	1 48 31.9	15.54	0.140 4104	0.298 6751	0.299 5612
19	332 15 12.3	38 05.79	24.3	1 47 59.2	17.14	0.140 3714	0.300 4444	0.301 3247
21	333 31 24.1	+ 38 05.99	- 26.4	- 1 47 23.3	+ 18.72	0.140 3506	0.302 2023	0.303 0772
23	334 47 36.1	38 06.00	28.5	1 46 44.3	20.30	0.140 3480	0.303 9493	0.304 8186
25	336 03 48.0	38 05.81	30.5	1 46 02.1	21.87	0.140 3636	0.305 6852	0.306 5493
27	337 19 59.2	38 05.42	32.4	1 45 16.8	23.42	0.140 3974	0.307 4108	0.308 2698
29	338 36 09.5	38 04.85	34.3	1 44 28.4	24.96	0.140 4494	0.309 1263	0.309 9803
31	339 52 18.5	+ 38 04.06	- 36.1	- 1 43 36.9	+ 26.48	0.140 5195	0.310 8321	0.311 6817
33	341 08 25.7	+ 38 03.09	- 37.8	- 1 42 42.5	+ 27.98	0.140 6077	0.312 5293	

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GREENWICH MEAN NOON.

Date.	Heliocentric Longitude, Mean Equinox of Date.			Daily Motion.	Reduction to Orbit.	Heliocentric Latitude.			Daily Motion.	Logarithm of Radius Vector.	Logarithm of Distance from Earth—	
											At Date.	At Interme- diate Date.
Jan. 3	325	37	43.2	+ 5 20.52	+ 26.9	— 0	56	40.8	— 5.07	0.701 0875	0.761 5981	0.762 9718
7	325	59	05.5	5 20.66	26.8	0	57	01.0	5.04	0.700 9959	0.764 2877	0.765 5454
11	326	20	28.4	5 20.80	26.8	0	57	21.1	5.01	0.700 9049	0.766 7449	0.767 8861
15	326	41	51.9	5 20.93	26.8	0	57	41.1	4.97	0.700 8144	0.768 9689	0.769 9933
19	327	03	15.9	5 21.07	26.7	0	58	00.9	4.94	0.700 7245	0.770 9586	0.771 8645
23	327	24	40.4	+ 5 21.20	+ 26.7	— 0	58	20.6	— 4.91	0.700 6351	0.772 7110	0.773 4973
27	327	46	05.4	5 21.33	26.7	0	58	40.2	4.88	0.700 5462	0.774 2233	0.774 8888
31	328	07	30.9	5 21.46	26.6	0	58	59.7	4.85	0.700 4578	0.775 4936	0.776 0376
Feb. 4	328	28	57.0	5 21.59	26.6	0	59	19.0	4.82	0.700 3700	0.776 5208	0.776 9433
8	328	50	23.6	5 21.72	26.6	0	59	38.2	4.79	0.700 2828	0.777 3053	0.777 6072
12	329	11	50.7	+ 5 21.85	+ 26.5	— 0	59	57.3	— 4.76	0.700 1962	0.777 8490	0.778 0307
16	329	33	18.4	5 21.98	26.5	1	00	16.2	4.72	0.700 1101	0.778 1523	0.778 2135
20	329	54	46.5	5 22.11	26.4	1	00	35.0	4.69	0.700 0244	0.778 2144	0.778 1551
24	330	16	15.2	5 22.23	26.3	1	00	53.7	4.65	0.699 9393	0.778 0354	0.777 8551
28	330	37	44.3	5 22.36	26.3	1	01	12.2	4.62	0.699 8548	0.777 6143	0.777 3132
Mar. 4	330	59	14.0	+ 5 22.48	+ 26.2	— 1	01	30.6	— 4.59	0.699 7709	0.776 9521	0.776 5313
8	331	20	44.1	5 22.61	26.2	1	01	48.9	4.55	0.699 6876	0.776 0511	0.775 5120
12	331	42	14.8	5 22.73	26.1	1	02	07.0	4.52	0.699 6050	0.774 9142	0.774 2581
16	332	03	46.0	5 22.85	26.0	1	02	25.0	4.48	0.699 5230	0.773 5437	0.772 7712
20	332	25	17.6	5 22.97	25.9	1	02	42.8	4.45	0.699 4415	0.771 9406	0.771 0520
24	332	46	49.7	+ 5 23.09	+ 25.8	— 1	03	00.5	— 4.41	0.699 3606	0.770 1055	0.769 1012
28	333	08	22.3	5 23.21	25.7	1	03	18.1	4.38	0.699 2803	0.768 0395	0.766 9207
Apr. 1	333	29	55.4	5 23.33	25.6	1	03	35.5	4.34	0.699 2005	0.765 7453	0.764 5135
5	333	51	29.0	5 23.45	25.5	1	03	52.7	4.30	0.699 1213	0.763 2261	0.761 8840
9	334	13	03.0	5 23.57	25.4	1	04	09.9	4.27	0.699 0428	0.760 4874	0.759 0370
13	334	34	37.5	+ 5 23.69	+ 25.3	— 1	04	26.9	— 4.23	0.698 9649	0.757 5329	0.755 9756
17	334	56	12.5	5 23.80	25.2	1	04	43.7	4.20	0.698 8876	0.754 3653	0.752 7025
21	335	17	47.9	5 23.92	25.1	1	05	00.4	4.16	0.698 8109	0.750 9874	0.749 2206
25	335	39	23.8	5 24.03	24.9	1	05	16.9	4.12	0.698 7348	0.747 4027	0.745 5341
29	336	01	00.1	5 24.14	24.8	1	05	33.3	4.09	0.698 6594	0.743 6159	0.741 6489
May 3	336	22	36.9	+ 5 24.25	+ 24.7	— 1	05	49.5	— 4.05	0.698 5847	0.739 6341	0.737 5726
7	336	44	14.2	5 24.36	24.5	1	06	05.6	4.01	0.698 5106	0.735 4653	0.733 3128
11	337	05	51.9	5 24.47	24.4	1	06	21.6	3.97	0.698 4370	0.731 1163	0.728 8765
15	337	27	30.0	5 24.58	24.2	1	06	37.4	3.93	0.698 3641	0.726 5942	0.724 2703
19	337	49	08.5	5 24.69	24.0	1	06	53.0	3.89	0.698 2919	0.721 9058	0.719 5015
23	338	10	47.4	+ 5 24.80	+ 23.9	— 1	07	08.5	— 3.85	0.698 2204	0.717 0590	0.714 5793
27	338	32	26.9	5 24.91	23.7	1	07	23.8	3.81	0.698 1495	0.712 0642	0.709 5153
31	338	54	06.8	5 25.02	23.6	1	07	39.0	3.77	0.698 0792	0.706 9345	0.704 3234
June 4	339	15	47.1	5 25.12	23.4	1	07	54.0	3.73	0.698 0095	0.701 6839	0.699 0181
8	339	37	27.8	5 25.23	23.3	1	08	08.9	3.69	0.697 9405	0.696 3276	0.693 6139
12	339	59	08.9	+ 5 25.33	+ 23.1	— 1	08	23.6	— 3.65	0.697 8722	0.690 8790	0.688 1249
16	340	20	50.4	5 25.44	22.9	1	08	38.1	3.61	0.697 8046	0.685 3537	0.682 5671
20	340	42	32.4	5 25.54	22.7	1	08	52.5	3.57	0.697 7376	0.679 7682	0.676 9600
24	341	04	14.7	5 25.64	22.5	1	09	06.7	3.53	0.697 6713	0.674 1450	0.671 3255
28	341	25	57.5	5 25.74	22.3	1	09	20.8	3.49	0.697 6056	0.668 5054	0.665 6881
July 2	341	47	40.6	+ 5 25.84	+ 22.1	— 1	09	34.7	— 3.45	0.697 5406	0.662 8768	0.660 0744
6	342	09	24.1	+ 5 25.94	+ 21.9	— 1	09	48.4	— 3.41	0.697 4763	0.657 2845	0.654 5104

JUPITER.

GREENWICH MEAN NOON.

Date.	Heliocentric Longitude, Mean Equinox of Date	Daily Motion.	Reduction to Orbit.	Heliocentric Latitude.	Daily Motion.	Logarithm of Radius Vector.	Logarithm of Distance from Earth—	
							At Date.	At Interme- diate Date.
July 2	341 47 40.6	+ 5 25.84	+ 22.1	— 1 09 34.7	— 3.45	0.697 5406	0.662 8768	0.660 0744
6	342 09 24.1	5 25.94	21.9	1 09 48.4	3.41	0.697 4763	0.657 2845	0.654 5104
10	342 31 08.0	5 26.03	21.7	1 10 02.0	3.37	0.697 4128	0.651 7554	0.649 0229
14	342 52 52.3	5 26.12	21.5	1 10 15.4	3.33	0.697 3500	0.646 3167	0.643 6406
18	343 14 37.0	5 26.22	21.3	1 10 28.6	3.29	0.697 2878	0.640 9987	0.638 3948
22	343 36 22.0	+ 5 26.31	+ 21.1	— 1 10 41.7	— 3.25	0.697 2263	0.635 8339	0.633 3207
26	343 58 07.4	5 26.40	20.9	1 10 54.6	3.21	0.697 1655	0.630 8596	0.628 4554
30	344 19 53.2	5 26.49	20.7	1 11 07.4	3.17	0.697 1054	0.626 1124	0.623 8352
Aug. 3	344 41 39.3	5 26.58	20.5	1 11 20.0	3.12	0.697 0460	0.621 6280	0.619 4951
7	345 03 25.8	5 26.67	20.3	1 11 32.4	3.08	0.696 9873	0.617 4406	0.615 4687
11	345 25 12.7	+ 5 26.76	+ 20.1	— 1 11 44.6	— 3.04	0.696 9293	0.613 5837	0.611 7900
15	345 46 59.9	5 26.85	19.8	1 11 56.7	3.00	0.696 8720	0.610 0916	0.608 4928
19	346 08 47.4	5 26.94	19.6	1 12 08.6	2.96	0.696 8155	0.606 9976	0.605 6105
23	346 30 35.3	5 27.02	19.3	1 12 20.3	2.91	0.696 7597	0.604 3348	0.603 1745
27	346 52 23.6	5 27.10	19.1	1 12 31.9	2.87	0.696 7046	0.602 1323	0.601 2114
31	347 14 12.1	+ 5 27.18	+ 18.9	— 1 12 43.3	— 2.83	0.696 6502	0.600 4136	0.599 7413
Sept. 4	347 36 01.0	5 27.26	18.6	1 12 54.5	2.78	0.696 5965	0.599 1958	0.598 7788
8	347 57 50.2	5 27.34	18.4	1 13 05.5	2.74	0.696 5435	0.598 4913	0.598 3345
12	348 19 39.8	5 27.42	18.1	1 13 16.4	2.69	0.696 4912	0.598 3088	0.598 4150
16	348 41 29.6	5 27.50	17.9	1 13 27.1	2.65	0.696 4395	0.598 6532	0.599 0232
20	349 03 19.8	+ 5 27.58	+ 17.6	— 1 13 37.6	— 2.61	0.696 3886	0.599 5243	0.600 1553
24	349 25 10.2	5 27.65	17.3	1 13 47.9	2.56	0.696 3386	0.600 9152	0.601 8019
28	349 47 01.0	5 27.73	17.1	1 13 58.1	2.52	0.696 2894	0.602 8122	0.603 9436
Oct. 2	350 08 52.1	5 27.80	16.8	1 14 08.1	2.48	0.696 2410	0.605 1930	0.606 5575
6	350 30 43.4	5 27.87	16.6	1 14 17.9	2.44	0.696 1933	0.608 0333	0.609 6170
10	350 52 35.1	+ 5 27.94	+ 16.3	— 1 14 27.6	— 2.40	0.696 1463	0.611 3050	0.613 0937
14	351 14 27.0	5 28.01	16.0	1 14 37.0	2.35	0.696 1000	0.614 9790	0.616 9574
18	351 36 19.2	5 28.08	15.7	1 14 46.3	2.30	0.696 0543	0.619 0241	0.621 1750
22	351 58 11.7	5 28.15	15.4	1 14 55.4	2.25	0.696 0093	0.623 4052	0.625 7100
26	352 20 04.4	5 28.22	15.2	1 15 04.3	2.21	0.695 9652	0.628 0842	0.630 5228
30	352 41 57.4	+ 5 28.29	+ 14.9	— 1 15 13.0	— 2.17	0.695 9219	0.633 0211	0.635 5741
Nov. 3	353 03 50.7	5 28.36	14.6	1 15 21.6	2.12	0.695 8794	0.638 1774	0.640 8261
7	353 25 44.3	5 28.42	14.3	1 15 30.0	2.08	0.695 8376	0.643 5162	0.646 2434
11	353 47 38.1	5 28.48	14.0	1 15 38.2	2.03	0.695 7966	0.649 0035	0.651 7925
15	354 09 32.1	5 28.54	13.7	1 15 46.2	1.99	0.695 7563	0.654 6062	0.657 4405
19	354 31 26.4	+ 5 28.60	+ 13.4	— 1 15 54.0	— 1.94	0.695 7168	0.660 2913	0.663 1543
23	354 53 20.9	5 28.66	13.1	1 16 01.6	1.90	0.695 6780	0.666 0257	0.668 9012
27	355 15 15.6	5 28.72	12.8	1 16 09.1	1.85	0.695 6400	0.671 7776	0.674 6511
Dec. 1	355 37 10.6	5 28.77	12.5	1 16 16.4	1.80	0.695 6028	0.677 5188	0.680 3772
5	355 59 05.8	5 28.83	12.2	1 16 23.5	1.76	0.695 5664	0.683 2240	0.686 0564
9	356 21 01.3	+ 5 28.89	+ 11.9	— 1 16 30.4	— 1.72	0.695 5307	0.688 8719	0.691 6681
13	356 42 56.9	5 28.94	11.6	1 16 37.1	1.67	0.695 4958	0.694 4424	0.697 1923
17	357 04 52.7	5 28.99	11.3	1 16 43.6	1.62	0.695 4617	0.699 9154	0.702 6092
21	357 26 48.8	5 29.04	11.0	1 16 50.0	1.57	0.695 4284	0.705 2716	0.707 9000
25	357 48 45.1	5 29.09	10.7	1 16 56.2	1.52	0.695 3958	0.710 4929	0.713 0485
29	358 10 41.5	+ 5 29.14	+ 10.4	— 1 17 02.1	— 1.47	0.695 3640	0.715 5652	0.718 0411
33	358 32 38.1	+ 5 29.18	+ 10.1	— 1 17 07.9	— 1.42	0.695 3330	0.720 4753	

SATURN.								
GREENWICH MEAN NOON.								
Date.	Heliocentric Longitude, Mean Equinox of Date.	Daily Motion.	Reduction to Orbit.	Heliocentric Latitude.	Daily Motion.	Logarithm of Radius Vector.	Logarithm of Distance from Earth—	
							At Date.	At Intermediate Date.
	° ' "	" "	" "	° ' "	" "			
Jan. 3	299 38 03.3	+ 1 49.70	+ 0 23.0	- 0 17 40.9	- 4.73	1.000 0517	1.039 1006	1.039 4421
7	299 45 22.1	1 49.72	0 23.4	0 17 59.8	4.73	1.000 0258	1.039 7432	1.040 0033
11	299 52 41.0	1 49.73	0 23.8	0 18 18.7	4.73	0.999 9998	1.040 2227	1.040 4013
15	299 59 59.9	1 49.74	0 24.2	0 18 37.6	4.73	0.999 9737	1.040 5390	1.040 6356
19	300 07 18.9	1 49.75	0 24.6	0 18 56.5	4.73	0.999 9475	1.040 6910	1.040 7052
23	300 14 38.0	+ 1 49.77	+ 0 25.0	- 0 19 15.5	- 4.73	0.999 9212	1.040 6782	1.040 6098
27	300 21 57.1	1 49.78	0 25.4	0 19 34.4	4.73	0.999 8948	1.040 5000	1.040 3487
31	300 29 16.2	1 49.79	0 25.8	0 19 53.3	4.73	0.999 8683	1.040 1561	1.039 9224
Feb. 4	300 36 35.4	1 49.81	0 26.2	0 20 12.2	4.72	0.999 8416	1.039 6480	1.039 3330
8	300 43 54.7	1 49.82	0 26.6	0 20 31.1	4.72	0.999 8148	1.038 9778	1.038 5828
12	300 51 14.0	+ 1 49.84	+ 0 27.0	- 0 20 50.0	- 4.72	0.999 7879	1.038 1483	1.037 6746
16	300 58 33.4	1 49.85	0 27.4	0 21 08.9	4.72	0.999 7609	1.037 1620	1.036 6106
20	301 05 52.8	1 49.86	0 27.8	0 21 27.8	4.72	0.999 7338	1.036 0207	1.035 3925
24	301 13 12.3	1 49.87	0 28.2	0 21 46.7	4.72	0.999 7066	1.034 7267	1.034 0236
28	301 20 31.8	1 49.89	0 28.6	0 22 05.5	4.72	0.999 6793	1.033 2839	1.032 5079
Mar. 4	301 27 51.4	+ 1 49.90	+ 0 29.0	- 0 22 24.4	- 4.72	0.999 6520	1.031 6963	1.030 8497
8	301 35 11.0	1 49.92	0 29.4	0 22 43.3	4.72	0.999 6245	1.029 9690	1.029 0548
12	301 42 30.7	1 49.93	0 29.8	0 23 02.2	4.72	0.999 5969	1.028 1079	1.027 1289
16	301 49 50.4	1 49.94	0 30.2	0 23 21.0	4.72	0.999 5692	1.026 1185	1.025 0773
20	301 57 10.2	1 49.95	0 30.6	0 23 39.9	4.71	0.999 5414	1.024 0061	1.022 9053
24	302 04 30.1	+ 1 49.97	+ 0 31.0	- 0 23 58.8	- 4.71	0.999 5134	1.021 7761	1.020 6193
28	302 11 50.0	1 49.98	0 31.4	0 24 17.6	4.71	0.999 4854	1.019 4358	1.018 2265
Apr. 1	302 19 10.0	1 50.00	0 31.8	0 24 36.4	4.71	0.999 4573	1.016 9925	1.015 7350
5	302 26 30.0	1 50.01	0 32.2	0 24 55.3	4.71	0.999 4291	1.014 4552	1.013 1544
9	302 33 50.1	1 50.03	0 32.6	0 25 14.1	4.71	0.999 4009	1.011 8337	1.010 4941
13	302 41 10.2	+ 1 50.04	+ 0 33.0	- 0 25 33.0	- 4.71	0.999 3726	1.009 1366	1.007 7623
17	302 48 30.4	1 50.06	0 33.4	0 25 51.8	4.71	0.999 3441	1.006 3724	1.004 9682
21	302 55 50.7	1 50.07	0 33.8	0 26 10.7	4.71	0.999 3155	1.003 5510	1.002 1220
25	303 03 11.0	1 50.08	0 34.2	0 26 29.5	4.71	0.999 2868	1.000 6828	0.999 2349
29	303 10 31.4	1 50.10	0 34.6	0 26 48.3	4.70	0.999 2580	0.997 7798	0.996 3191
May 3	303 17 51.8	+ 1 50.11	+ 0 34.9	- 0 27 07.1	- 4.70	0.999 2291	0.994 8544	0.993 3875
7	303 25 12.3	1 50.13	0 35.3	0 27 25.9	4.70	0.999 2000	0.991 9199	0.990 4532
11	303 32 32.8	1 50.14	0 35.7	0 27 44.7	4.70	0.999 1709	0.988 9888	0.987 5284
15	303 39 53.4	1 50.16	0 36.1	0 28 03.5	4.70	0.999 1417	0.986 0735	0.984 6257
19	303 47 14.1	1 50.17	0 36.5	0 28 22.3	4.70	0.999 1125	0.983 1867	0.981 7584
23	303 54 34.8	+ 1 50.19	+ 0 36.9	- 0 28 41.1	- 4.70	0.999 0832	0.980 3426	0.978 9410
27	304 01 55.6	1 50.20	0 37.3	0 28 59.9	4.70	0.999 0537	0.977 5556	0.976 1884
31	304 09 16.4	1 50.22	0 37.7	0 29 18.7	4.69	0.999 0241	0.974 8414	0.973 5165
June 4	304 16 37.3	1 50.23	0 38.1	0 29 37.5	4.69	0.998 9944	0.972 2153	0.970 9397
8	304 23 58.3	1 50.25	0 38.5	0 29 56.3	4.69	0.998 9646	0.969 6912	0.968 4716
12	304 31 19.3	+ 1 50.27	+ 0 38.8	- 0 30 15.0	- 4.69	0.998 9347	0.967 2826	0.966 1259
16	304 38 40.4	1 50.28	0 39.2	0 30 33.8	4.69	0.998 9046	0.965 0031	0.963 9161
20	304 46 01.6	1 50.29	0 39.6	0 30 52.5	4.69	0.998 8744	0.962 8665	0.961 8561
24	304 53 22.8	1 50.31	0 40.0	0 31 11.3	4.69	0.998 8442	0.960 8867	0.959 9601
28	305 00 44.1	1 50.33	0 40.4	0 31 30.0	4.68	0.998 8139	0.959 0778	0.958 2414
July 2	305 08 05.4	+ 1 50.34	+ 0 40.7	- 0 31 48.7	- 4.68	0.998 7836	0.957 4520	0.956 7112
6	305 15 26.8	+ 1 50.36	+ 0 41.1	- 0 32 07.5	- 4.68	0.998 7532	0.956 0197	0.955 3786

SATURN.

GREENWICH MEAN NOON.

Date.	Heliocentric Longitude, Mean Equinox of Date.	Daily Motion.	Reduction to Orbit.	Heliocentric Latitude.	Daily Motion.	Logarithm of Radius Vector.	Logarithm of Distance from Earth—	
							At Date.	At Intermediate Date.
	° ' "	" "	" "	° ' "	" "			
July 2	305 08 05.4	+ 1 50.34	+ 0 40.7	- 0 31 48.7	- 4.68	0.998 7836	0.957 4520	0.956 7112
6	305 15 26.8	1 50.36	0 41.1	0 32 07.5	4.68	0.998 7532	0.956 0197	0.955 3786
10	305 22 48.3	1 50.37	0 41.4	0 32 26.2	4.68	0.998 7226	0.954 7889	0.954 2518
14	305 30 09.8	1 50.39	0 41.8	0 32 44.9	4.68	0.998 6919	0.953 7682	0.953 3389
18	305 37 31.4	1 50.40	0 42.2	0 33 03.6	4.68	0.998 6610	0.952 9648	0.952 6468
22	305 44 53.0	+ 1 50.42	+ 0 42.6	- 0 33 22.3	- 4.67	0.998 6300	0.952 3856	0.952 1819
26	305 52 14.7	1 50.43	0 43.0	0 33 41.0	4.67	0.998 5989	0.952 0360	0.951 9482
30	305 59 36.5	1 50.45	0 43.4	0 33 59.7	4.67	0.998 5677	0.951 9186	0.951 9474
Aug. 3	306 06 58.3	1 50.47	0 43.8	0 34 18.4	4.67	0.998 5365	0.952 0342	0.952 1785
7	306 14 20.2	1 50.48	0 44.2	0 34 37.1	4.67	0.998 5052	0.952 3801	0.952 6385
11	306 21 42.2	+ 1 50.50	+ 0 44.5	- 0 34 55.7	- 4.67	0.998 4739	0.952 9534	0.953 3248
15	306 29 04.2	1 50.51	0 44.9	0 35 14.4	4.66	0.998 4424	0.953 7518	0.954 2335
19	306 36 26.3	1 50.53	0 45.3	0 35 33.0	4.66	0.998 4108	0.954 7694	0.955 3590
23	306 43 48.4	1 50.54	0 45.6	0 35 51.7	4.66	0.998 3791	0.956 0009	0.956 6942
27	306 51 10.6	1 50.56	0 46.0	0 36 10.4	4.66	0.998 3472	0.957 4373	0.958 2289
31	306 58 32.9	+ 1 50.57	+ 0 46.3	- 0 36 29.0	- 4.66	0.998 3152	0.959 0675	0.959 9519
Sept. 4	307 05 55.2	1 50.59	0 46.7	0 36 47.6	4.65	0.998 2831	0.960 8803	0.961 8513
8	307 13 17.6	1 50.61	0 47.0	0 37 06.2	4.65	0.998 2510	0.962 8633	0.963 9148
12	307 20 40.1	1 50.62	0 47.4	0 37 24.8	4.65	0.998 2188	0.965 0041	0.966 1297
16	307 28 02.6	1 50.64	0 47.8	0 37 43.4	4.65	0.998 1866	0.967 2898	0.968 4830
20	307 35 25.2	+ 1 50.66	+ 0 48.1	- 0 38 02.0	- 4.65	0.998 1543	0.969 7073	0.970 9609
24	307 42 47.9	1 50.67	0 48.5	0 38 20.6	4.65	0.998 1219	0.972 2416	0.973 5473
28	307 50 10.6	1 50.69	0 48.8	0 38 39.2	4.64	0.998 0893	0.974 8761	0.976 2262
Oct. 2	307 57 33.4	1 50.71	0 49.2	0 38 57.8	4.64	0.998 0566	0.977 5955	0.978 9822
6	308 04 56.3	1 50.72	0 49.6	0 39 16.4	4.64	0.998 0238	0.980 3844	0.981 8002
10	308 12 19.2	+ 1 50.74	+ 0 49.9	- 0 39 34.9	- 4.64	0.997 9908	0.983 2281	0.984 6663
14	308 19 42.2	1 50.76	0 50.3	0 39 53.4	4.64	0.997 9578	0.986 1131	0.987 5666
18	308 27 05.3	1 50.77	0 50.6	0 40 12.0	4.63	0.997 9247	0.989 0250	0.990 4866
22	308 34 28.4	1 50.79	0 51.0	0 40 30.5	4.63	0.997 8915	0.991 9495	0.993 4115
26	308 41 51.6	1 50.80	0 51.4	0 40 49.0	4.63	0.997 8583	0.994 8711	0.996 3265
30	308 49 14.8	+ 1 50.82	+ 0 51.7	- 0 41 07.6	- 4.63	0.997 8250	0.997 7761	0.999 2183
Nov. 3	308 56 38.1	1 50.84	0 52.1	0 41 26.1	4.63	0.997 7916	1.000 6517	1.002 0747
7	309 04 01.5	1 50.85	0 52.4	0 41 44.6	4.62	0.997 7581	1.003 4860	1.004 8842
11	309 11 25.0	1 50.87	0 52.8	0 42 03.1	4.62	0.997 7245	1.006 2681	1.007 6363
15	309 18 48.5	1 50.89	0 53.1	0 42 21.5	4.62	0.997 6907	1.008 9874	1.010 3198
19	309 26 12.1	+ 1 50.91	+ 0 53.5	- 0 42 40.0	- 4.62	0.997 6568	1.011 6324	1.012 9239
23	309 33 35.7	1 50.92	0 53.8	0 42 58.5	4.61	0.997 6228	1.014 1929	1.015 4381
27	309 40 59.4	1 50.94	0 54.2	0 43 16.9	4.61	0.997 5888	1.016 6586	1.017 8535
Dec. 1	309 48 23.2	1 50.96	0 54.6	0 43 35.4	4.61	0.997 5547	1.019 0216	1.020 1617
5	309 55 47.1	1 50.97	0 54.9	0 43 53.8	4.61	0.997 5205	1.021 2732	1.022 3556
9	310 03 11.0	+ 1 50.99	+ 0 55.2	- 0 44 12.2	- 4.60	0.997 4862	1.023 4080	1.024 4294
13	310 10 35.0	1 51.01	0 55.6	0 44 30.6	4.60	0.997 4518	1.025 4190	1.026 3759
17	310 17 59.1	1 51.02	0 55.9	0 44 49.0	4.60	0.997 4173	1.027 2992	1.028 1882
21	310 25 23.2	1 51.04	0 56.3	0 45 07.4	4.60	0.997 3827	1.029 0421	1.029 8602
25	310 32 47.4	1 51.06	0 56.6	0 45 25.8	4.60	0.997 3480	1.030 6420	1.031 3871
29	310 40 11.7	+ 1 51.08	+ 0 57.0	- 0 45 44.2	- 4.59	0.997 3133	1.032 0949	1.032 7650
33	310 47 36.1	+ 1 51.09	+ 0 57.3	- 0 46 02.6	- 4.59	0.997 2785	1.033 3971	

URANUS.

GREENWICH MEAN NOON.

Date.	Heliocentric Longitude, Mean Equinox of Date.	Daily Motion.	Reduction to Orbit.	Heliocentric Latitude.	Daily Motion.	Logarithm of Radius Vector.	Logarithm of Distance from Earth—	
							At Date.	At Intermediate Date.
Jan. 3	261 43 10.2	+ 42.37	+ 2.7	0 06 34.7	— 0.57	1.283 1163	1.303 5693	1.303 0452
11	261 48 49.1	42.37	2.7	0 06 39.2	0.57	1.283 1485	1.302 4301	1.301 7262
19	261 54 28.0	42.36	2.7	0 06 43.7	0.57	1.283 1808	1.300 9364	1.300 0631
27	262 00 06.9	42.35	2.7	0 06 48.3	0.57	1.283 2131	1.299 1091	1.298 0787
Feb. 4	262 05 45.7	42.34	2.8	0 06 52.8	0.56	1.283 2453	1.296 9763	1.295 8066
12	262 11 24.4	+ 42.34	+ 2.8	0 06 57.3	— 0.56	1.283 2776	1.294 5750	1.293 2859
20	262 17 03.1	42.33	2.8	0 07 01.8	0.56	1.283 3099	1.291 9445	1.290 5562
28	262 22 41.7	42.32	2.9	0 07 06.3	0.56	1.283 3421	1.289 1270	1.287 6636
Mar. 8	262 28 20.2	42.32	2.9	0 07 10.9	0.56	1.283 3743	1.286 1731	1.284 6624
16	262 33 58.7	42.31	2.9	0 07 15.4	0.56	1.283 4065	1.283 1379	1.281 6062
24	262 39 37.1	+ 42.30	+ 2.9	0 07 19.9	— 0.56	1.283 4386	1.280 0745	1.278 5503
Apr. 1	262 45 15.5	42.30	3.0	0 07 24.4	0.56	1.283 4708	1.277 0412	1.275 5553
9	262 50 53.9	42.29	3.1	0 07 28.9	0.56	1.283 5030	1.274 0999	1.272 6821
17	262 56 32.2	42.28	3.1	0 07 33.4	0.56	1.283 5352	1.271 3086	1.269 9864
25	263 02 10.4	42.27	3.1	0 07 37.9	0.56	1.283 5673	1.268 7222	1.267 5240
May 3	263 07 48.6	+ 42.27	+ 3.1	0 07 42.4	— 0.56	1.283 5995	1.266 3983	1.265 3512
11	263 13 26.7	42.26	3.1	0 07 46.9	0.56	1.283 6316	1.264 3878	1.263 5128
19	263 19 04.7	42.25	3.2	0 07 51.4	0.56	1.283 6638	1.262 7317	1.262 0484
27	263 24 42.7	42.25	3.2	0 07 55.9	0.56	1.283 6959	1.261 4675	1.260 9928
June 4	263 30 20.6	42.24	3.2	0 08 00.4	0.56	1.283 7280	1.260 6266	1.260 3706
12	263 35 58.5	+ 42.23	+ 3.2	0 08 04.9	— 0.56	1.283 7601	1.260 2258	1.260 1928
20	263 41 36.3	42.22	3.3	0 08 09.4	0.56	1.283 7922	1.260 2722	1.260 4641
28	263 47 14.1	42.21	3.3	0 08 13.9	0.56	1.283 8243	1.260 7676	1.261 1808
July 6	263 52 51.8	42.21	3.3	0 08 18.4	0.56	1.283 8564	1.261 7005	1.262 3235
14	263 58 29.4	42.20	3.3	0 08 22.8	0.56	1.283 8885	1.263 0468	1.263 8661
22	264 04 07.0	+ 42.20	+ 3.4	0 08 27.3	— 0.56	1.283 9206	1.264 7775	1.265 7767
30	264 09 44.5	42.19	3.4	0 08 31.8	0.56	1.283 9526	1.266 8573	1.268 0132
Aug. 7	264 15 22.0	42.18	3.4	0 08 36.3	0.56	1.283 9847	1.269 2384	1.270 5263
15	264 20 59.4	42.17	3.5	0 08 40.7	0.56	1.284 0167	1.271 8710	1.273 2659
23	264 26 36.7	42.16	3.5	0 08 45.2	0.56	1.284 0488	1.274 7042	1.276 1783
31	264 32 14.0	+ 42.16	+ 3.5	0 08 49.7	— 0.56	1.284 0808	1.277 6808	1.279 2043
Sept. 8	264 37 51.3	42.15	3.5	0 08 54.1	0.56	1.284 1128	1.280 7417	1.282 2866
16	264 43 28.4	42.14	3.6	0 08 58.6	0.56	1.284 1448	1.283 8320	1.285 3715
24	264 49 05.5	42.14	3.6	0 09 03.1	0.56	1.284 1768	1.286 8974	1.288 4028
Oct. 2	264 54 42.6	42.13	3.6	0 09 07.5	0.56	1.284 2088	1.289 8811	1.291 3262
10	265 00 19.6	+ 42.12	+ 3.7	0 09 12.0	— 0.56	1.284 2408	1.292 7325	1.294 0946
18	265 05 56.5	42.11	3.7	0 09 16.4	0.56	1.284 2727	1.295 4067	1.296 6635
26	265 11 33.4	42.11	3.7	0 09 20.9	0.56	1.284 3047	1.297 8590	1.298 9886
Nov. 3	265 17 10.3	42.10	3.7	0 09 25.4	0.56	1.284 3366	1.300 0482	1.301 0343
11	265 22 47.0	42.09	3.8	0 09 29.8	0.56	1.284 3686	1.301 9428	1.302 7706
19	265 28 23.7	+ 42.09	+ 3.8	0 09 34.3	— 0.56	1.284 4005	1.303 5137	1.304 1691
27	265 34 00.4	42.08	3.8	0 09 38.7	0.56	1.284 4324	1.304 7343	1.305 2075
Dec. 5	265 39 37.0	42.07	3.8	0 09 43.1	0.55	1.284 4643	1.305 5871	1.305 8720
13	265 45 13.6	42.06	3.9	0 09 47.6	0.55	1.284 4962	1.306 0610	1.306 1528
21	265 50 50.1	42.06	3.9	0 09 52.0	0.55	1.284 5281	1.306 1468	1.306 0429
29	265 56 26.5	+ 42.05	+ 3.9	0 09 56.5	— 0.55	1.284 5600	1.305 8418	1.305 5449
37	266 02 02.9	+ 42.04	+ 3.9	0 10 00.9	— 0.55	1.284 5919		

NEPTUNE.

GREENWICH MEAN NOON.

Date.	Heliocentric Longitude, Mean Equinox of Date.	Daily Motion.	Reduction to Orbit.	Heliocentric Latitude.	Daily Motion.	Logarithm of Radius Vector.	Logarithm of Distance from Earth--	
							At Date.	At Intermediate Date.
Jan. 3	92 22 00.0	+ 21.88	- 48.4	- 1 06 14.6	+ 0.53	1.475 5764	1.461 2672	1.461 4857
11	92 24 55.1	21.88	48.4	1 06 10.3	0.53	1.475 5795	1.461 7764	1.462 1374
19	92 27 50.1	21.88	48.4	1 06 06.1	0.53	1.475 5825	1.462 5673	1.463 0633
27	92 30 45.2	21.88	48.4	1 06 01.8	0.53	1.475 5856	1.463 6224	1.464 2420
Feb. 4	92 33 40.2	21.88	48.3	1 05 57.5	0.53	1.475 5887	1.464 9177	1.465 6454
12	92 36 35.3	+ 21.88	- 48.3	- 1 05 53.3	+ 0.53	1.475 5918	1.466 4210	1.467 2407
20	92 39 30.3	21.88	48.3	1 05 49.0	0.53	1.475 5949	1.468 0966	1.468 9933
28	92 42 25.4	21.88	48.3	1 05 44.7	0.53	1.475 5980	1.469 9168	1.470 8653
Mar. 8	92 45 20.4	21.88	48.3	1 05 40.5	0.53	1.475 6011	1.471 8335	1.472 8161
16	92 48 15.5	21.88	48.2	1 05 36.2	0.54	1.475 6042	1.473 8087	1.474 8068
24	92 51 10.5	+ 21.88	- 48.2	- 1 05 31.9	+ 0.54	1.475 6073	1.475 8054	1.476 7997
Apr. 1	92 54 05.6	21.88	48.2	1 05 27.6	0.54	1.475 6104	1.477 7852	1.478 7571
9	92 57 00.6	21.88	48.2	1 05 23.4	0.54	1.475 6135	1.479 7113	1.480 6431
17	92 59 55.7	21.88	48.2	1 05 19.1	0.54	1.475 6167	1.481 5492	1.482 4260
25	93 02 50.7	21.88	48.1	1 05 14.8	0.54	1.475 6198	1.483 2699	1.484 0771
May 3	93 05 45.8	+ 21.88	- 48.1	- 1 05 10.5	+ 0.54	1.475 6230	1.484 8446	1.485 5688
11	93 08 40.8	21.88	48.1	1 05 06.2	0.54	1.475 6261	1.486 2477	1.486 8789
19	93 11 35.9	21.88	48.1	1 05 01.9	0.54	1.475 6293	1.487 4602	1.487 9892
27	93 14 31.0	21.88	48.0	1 04 57.6	0.54	1.475 6324	1.488 4641	1.488 8825
June 4	93 17 26.0	21.88	48.0	1 04 53.3	0.54	1.475 6356	1.489 2436	1.489 5462
12	93 20 21.1	+ 21.88	- 48.0	- 1 04 49.0	+ 0.54	1.475 6388	1.489 7895	1.489 9726
20	93 23 16.2	21.88	48.0	1 04 44.7	0.54	1.475 6420	1.490 0951	1.490 1561
28	93 26 11.2	21.88	47.9	1 04 40.4	0.54	1.475 6452	1.490 1556	1.490 0931
July 6	93 29 06.3	21.88	47.9	1 04 36.1	0.54	1.475 6484	1.489 9695	1.489 7852
14	93 32 01.4	21.88	47.9	1 04 31.7	0.54	1.475 6516	1.489 5412	1.489 2383
22	93 34 56.4	+ 21.88	- 47.9	- 1 04 27.4	+ 0.54	1.475 6548	1.488 8773	1.488 4587
30	93 37 51.5	21.89	47.8	1 04 23.1	0.54	1.475 6580	1.487 9847	1.487 4570
Aug. 7	93 40 46.6	21.89	47.8	1 04 18.8	0.54	1.475 6612	1.486 8779	1.486 2494
15	93 43 41.7	21.89	47.8	1 04 14.4	0.54	1.475 6644	1.485 5738	1.484 8528
23	93 46 36.8	21.89	47.8	1 04 10.1	0.54	1.475 6676	1.484 0866	1.483 2870
31	93 49 31.8	+ 21.89	- 47.8	- 1 04 05.8	+ 0.54	1.475 6708	1.482 4486	1.481 5778
Sept. 8	93 52 26.9	21.89	47.7	1 04 01.4	0.54	1.475 6740	1.480 6782	1.479 7531
16	93 55 22.0	21.89	47.7	1 03 57.1	0.54	1.475 6772	1.478 8065	1.477 8419
24	93 58 17.1	21.89	47.7	1 03 52.8	0.54	1.475 6805	1.476 8641	1.475 8777
Oct. 2	94 01 12.2	21.89	47.7	1 03 48.4	0.54	1.475 6837	1.474 8872	1.473 8974
10	94 04 07.3	+ 21.89	- 47.6	- 1 03 44.1	+ 0.54	1.475 6870	1.472 9127	1.471 9374
18	94 07 02.4	21.89	47.6	1 03 39.8	0.54	1.475 6902	1.470 9765	1.470 0352
26	94 09 57.5	21.89	47.6	1 03 35.4	0.55	1.475 6935	1.469 1181	1.468 2308
Nov. 3	94 12 52.6	21.89	47.6	1 03 31.0	0.55	1.475 6968	1.467 3775	1.466 5629
11	94 15 47.7	21.89	47.5	1 03 26.6	0.55	1.475 7001	1.465 7911	1.465 0666
19	94 18 42.8	+ 21.89	- 47.5	- 1 03 22.3	+ 0.55	1.475 7034	1.464 3936	1.463 7768
27	94 21 37.9	21.89	47.5	1 03 17.9	0.55	1.475 7067	1.463 2191	1.462 7245
Dec. 5	94 24 33.0	21.89	47.5	1 03 13.6	0.55	1.475 7100	1.462 2950	1.461 9335
13	94 27 28.1	21.89	47.4	1 03 09.2	0.55	1.475 7133	1.461 6419	1.461 4229
21	94 30 23.3	21.89	47.4	1 03 04.8	0.55	1.475 7166	1.461 2774	1.461 2072
29	94 33 18.4	+ 21.89	- 47.4	- 1 03 00.4	+ 0.55	1.475 7199	1.461 2118	1.461 2918
37	94 36 13.5	+ 21.89	- 47.3	- 1 02 56.1	+ 0.55	1.475 7232	1.461 4454	

FOR GREENWICH MEAN NOON AND MIDNIGHT.

Date.	X True Equinox.		Reduc. to Mean Eq'x of Jan. 0.	Y True Equinox.		Reduc. to Mean Eq'x of Jan. 0.	Z True Equinox.		Reduc. to Mean Eq'x of Jan. 0.
	Noon.	Midnight.		Noon.	Midnight.		Noon.	Midnight.	
Jan. 1	+0.169 3883	+0.177 9993	- 319	-0.888 5947	-0.887 1724	+ 120	-0.385 4370	-0.384 8201	- 418
2	0.186 5963	0.195 1784	326	0.885 6808	0.884 1201	113	0.384 1733	0.383 4965	419
3	0.203 7450	0.212 2954	333	0.882 4903	0.880 7916	106	0.382 7808	0.382 0533	420
4	0.220 8290	0.229 3450	339	0.879 0242	0.877 1884	98	0.381 2868	0.380 4908	422
5	0.237 8428	0.246 3216	345	0.875 2842	0.873 3119	90	0.379 6652	0.378 8101	423
6	+0.254 7809	+0.263 2200	- 351	-0.871 2716	-0.869 1636	+ 82	-0.377 9255	-0.377 0115	- 424
7	0.271 6382	0.280 0348	356	0.866 9881	0.864 7452	73	0.376 0681	0.375 0955	426
8	0.288 4092	0.296 7609	362	0.862 4352	0.860 0584	64	0.374 0938	0.373 0632	428
9	0.305 0891	0.313 3933	367	0.857 6150	0.855 1052	55	0.372 0038	0.370 9155	428
10	0.321 6729	0.329 9273	372	0.852 5292	0.849 8874	46	0.369 7984	0.368 6527	429
11	+0.338 1559	+0.346 3582	- 377	-0.847 1798	-0.844 4067	+ 36	-0.367 4785	-0.366 2758	- 430
12	0.354 5335	0.362 6813	381	0.841 5684	0.838 6651	26	0.365 0448	0.363 7855	430
13	0.370 8009	0.378 8919	386	0.835 6970	0.832 6644	16	0.362 4981	0.361 1827	431
14	0.386 9536	0.394 9855	390	0.829 5674	0.826 4061	+ 5	0.359 8393	0.358 4680	432
15	0.402 9871	0.410 9576	394	0.823 1809	0.819 8921	- 5	0.357 0689	0.355 6422	432
16	+0.418 8966	+0.426 8034	- 397	-0.816 5398	-0.813 1242	- 16	-0.354 1879	-0.352 7061	- 433
17	0.434 6775	0.442 5182	400	0.809 6455	0.806 1041	27	0.351 1970	0.349 6606	433
18	0.450 3250	0.458 0973	403	0.802 5000	0.798 8335	38	0.348 0970	0.346 5063	434
19	0.465 8344	0.473 5357	406	0.795 1050	0.791 3147	49	0.344 8887	0.343 2443	435
20	0.481 2005	0.488 8284	408	0.787 4629	0.783 5496	60	0.341 5732	0.339 8755	435
21	+0.496 4186	+0.503 9706	- 410	-0.779 5753	-0.775 5401	- 72	-0.338 1513	-0.336 4007	- 436
22	0.511 4837	0.518 9574	411	0.771 4445	0.767 2888	84	0.334 6239	0.332 8210	436
23	0.526 3910	0.533 7839	413	0.763 0733	0.758 7982	95	0.330 9923	0.329 1378	436
24	0.541 1355	0.548 4452	414	0.754 4639	0.750 0708	107	0.327 2576	0.325 3519	436
25	0.555 7124	0.562 9365	414	0.745 6192	0.741 1095	119	0.323 4209	0.321 4647	436
26	+0.570 1170	+0.577 2533	- 415	-0.736 5420	-0.731 9171	- 132	-0.319 4834	-0.317 4773	- 436
27	0.584 3448	0.591 3908	415	0.727 2352	0.722 4965	144	0.315 4465	0.313 3911	436
28	0.598 3909	0.605 3443	415	0.717 7015	0.712 8507	157	0.311 3114	0.309 2075	436
29	0.612 2507	0.619 1095	414	0.707 9445	0.702 9833	169	0.307 0795	0.304 9277	435
30	0.625 9200	0.632 6817	414	0.697 9674	0.692 8973	182	0.302 7522	0.300 5532	435
31	+0.639 3941	+0.646 0568	- 413	-0.687 7734	-0.682 5963	- 195	-0.298 3309	-0.296 0855	- 435
Feb. 1	0.652 6691	0.659 2305	411	0.677 3664	0.672 0840	207	0.293 8173	0.291 5263	435
2	0.665 7406	0.672 1989	409	0.666 7497	0.661 3638	220	0.289 2129	0.286 8771	434
3	0.678 6048	0.684 9579	407	0.655 9269	0.650 4395	232	0.284 5192	0.282 1393	434
4	0.691 2577	0.697 5038	404	0.644 9021	0.639 3151	245	0.279 7377	0.277 3146	433
5	+0.703 6958	+0.709 8331	- 402	-0.633 6790	-0.627 9942	- 258	-0.274 8702	-0.272 4047	- 432
6	0.715 9154	0.721 9424	398	0.622 2614	0.616 4810	270	0.269 9183	0.267 4112	431
7	0.727 9135	0.733 8284	394	0.610 6535	0.604 7793	283	0.264 8837	0.262 3358	430
8	0.739 6866	0.745 4878	390	0.598 8588	0.592 8927	296	0.259 7679	0.257 1801	429
9	0.751 2317	0.756 9177	386	0.586 8814	0.580 8253	309	0.254 5727	0.251 9458	428
10	+0.762 5457	+0.768 1153	- 382	-0.574 7249	-0.568 5807	- 321	-0.249 2996	-0.246 6344	- 427
11	0.773 6260	0.779 0774	377	0.562 3930	0.556 1623	334	0.243 9503	0.241 2475	426
12	0.784 4695	0.789 8015	372	0.549 8892	0.543 5740	347	0.238 5262	0.235 7867	425
13	0.795 0732	0.800 2843	367	0.537 2173	0.530 8194	359	0.233 0291	0.230 2536	423
14	0.805 4343	0.810 5229	361	0.524 3808	0.517 9020	371	0.227 4605	0.224 6499	422
15	+0.815 5498	+0.820 5145	- 355	-0.511 3834	-0.504 8254	- 384	-0.221 8221	-0.218 9772	- 420
16	+0.825 4166	+0.830 2557	- 349	-0.498 2285	-0.491 5933	- 396	-0.216 1154	-0.213 2370	- 419

FOR GREENWICH MEAN NOON AND MIDNIGHT.

Date.	X True Equinox.		Reduc. to Mean Eq'x of Jan. o.	Y True Equinox.		Reduc. to Mean Eq'x of Jan. o.	Z True Equinox.		Reduc. to Mean Eq'x of Jan. o.
	Noon.	Midnight.		Noon.	Midnight.		Noon.	Midnight.	
Feb. 16	+0.825 4166	+0.830 2557	- 349	-0.498 2285	-0.491 5933	- 396	-0.216 1154	-0.213 2370	- 419
17	0.835 0315	0.839 7437	342	0.484 9203	0.478 2098	408	0.210 3421	0.207 4310	417
18	0.844 3918	0.848 9755	335	0.471 4625	0.464 6788	420	0.204 5040	0.201 5612	415
19	0.853 4944	0.857 9481	328	0.457 8592	0.451 0041	432	0.198 6028	0.195 6291	413
20	0.862 3362	0.866 6585	320	0.444 1142	0.437 1900	444	0.192 6403	0.189 6367	411
21	+0.870 9146	+0.875 1042	- 312	-0.430 2321	-0.423 2409	- 456	-0.186 6185	-0.183 5859	- 409
22	0.879 2269	0.883 2824	304	0.416 2171	0.409 1611	467	0.180 5391	0.177 4784	407
23	0.887 2704	0.891 1904	296	0.402 0735	0.394 9550	478	0.174 4041	0.171 3163	404
24	0.895 0423	0.898 8258	288	0.387 8060	0.380 6271	490	0.168 2154	0.165 1015	402
25	0.902 5405	0.906 1862	279	0.373 4188	0.366 1818	501	0.161 9750	0.158 8360	400
26	+0.909 7625	+0.913 2691	- 270	-0.358 9167	-0.351 6240	- 512	-0.155 6849	-0.152 5218	- 397
27	0.916 7059	0.920 0725	261	0.344 3044	0.336 9585	522	0.149 3471	0.146 1609	394
28	0.923 3688	0.926 5944	251	0.329 5868	0.322 1899	533	0.142 9635	0.139 7554	392
Mar. 1	0.929 7492	0.932 8328	241	0.314 7686	0.307 3234	544	0.136 5366	0.133 3075	389
2	0.935 8452	0.938 7862	231	0.299 8549	0.292 3637	554	0.130 0683	0.126 8192	386
3	+0.941 6555	+0.944 4530	- 221	-0.284 8504	-0.277 3158	- 564	-0.123 5605	-0.120 2926	- 383
4	0.947 1785	0.949 8318	211	0.269 7604	0.262 1847	574	0.117 0156	0.113 7298	380
5	0.952 4129	0.954 9215	200	0.254 5895	0.246 9754	584	0.110 4356	0.107 1331	377
6	0.957 3576	0.959 7211	189	0.239 3429	0.231 6927	594	0.103 8226	0.100 5044	374
7	0.962 0119	0.964 2299	178	0.224 0254	0.216 3416	603	0.097 1787	0.093 8458	370
8	+0.966 3749	+0.968 4469	- 167	-0.208 6418	-0.200 9266	- 613	-0.090 5059	-0.087 1593	- 367
9	0.970 4459	0.972 3717	155	0.193 1966	0.185 4525	622	0.083 8062	0.080 4470	363
10	0.974 2244	0.976 0038	143	0.177 6947	0.169 9239	631	0.077 0818	0.073 7109	359
11	0.977 7098	0.979 3425	132	0.162 1405	0.154 3452	639	0.070 3346	0.066 9531	355
12	0.980 9017	0.982 3873	120	0.146 5384	0.138 7207	647	0.063 5665	0.060 1751	352
13	+0.983 7994	+0.985 1378	- 107	-0.130 8928	-0.123 0551	- 655	-0.056 7793	-0.053 3792	- 348
14	0.986 4026	0.987 5936	95	0.115 2082	0.107 3525	663	0.049 9751	0.046 5672	344
15	0.988 7107	0.989 7539	82	0.099 4887	0.091 6172	672	0.043 1557	0.039 7410	340
16	0.990 7230	0.991 6180	70	0.083 7387	0.075 8536	680	0.036 3232	0.032 9026	336
17	0.992 4389	0.993 1856	57	0.067 9626	0.060 0663	687	0.029 4795	0.026 0540	331
18	+0.993 8581	+0.994 4562	- 44	-0.052 1652	-0.044 2599	- 695	-0.022 6265	-0.019 1972	- 327
19	0.994 9799	0.995 4292	31	0.036 3509	0.028 4389	702	0.015 7663	0.012 3341	322
20	0.995 8040	0.996 1043	17	0.020 5244	-0.012 6080	708	0.008 9009	-0.005 4669	317
21	0.996 3301	0.996 4814	- 4	-0.004 6904	+0.003 2280	715	-0.002 0324	+0.001 4024	313
22	0.996 5581	0.996 5602	+ 10	+0.011 1466	0.019 0646	722	+0.004 8372	0.008 2717	308
23	+0.996 4878	+0.996 3408	+ 23	+0.026 9816	+0.034 8969	- 727	+0.011 7058	+0.015 1391	- 303
24	0.996 1192	0.995 8230	37	0.042 8098	0.050 7198	733	0.018 5713	0.022 0022	298
25	0.995 4523	0.995 0071	51	0.058 6262	0.066 5285	739	0.025 4316	0.028 8591	293
26	0.994 4875	0.993 8934	65	0.074 4261	0.082 3183	745	0.032 2846	0.035 7077	288
27	0.993 2250	0.992 4823	79	0.090 2045	0.098 0841	750	0.039 1282	0.042 5458	282
28	+0.991 6653	+0.990 7743	+ 93	+0.105 9564	+0.113 8209	- 755	+0.045 9602	+0.049 3712	- 277
29	0.989 8092	0.988 7702	108	0.121 6769	0.129 5238	760	0.052 7786	0.056 1819	271
30	0.987 6573	0.986 4708	122	0.137 3609	0.145 1876	765	0.059 5810	0.062 9757	266
31	0.985 2108	0.983 8773	137	0.153 0034	0.160 8076	769	0.066 3656	0.069 7504	260
Apr. 1	0.982 4706	0.980 9909	152	0.168 5995	0.176 3785	773	0.073 1300	0.076 5040	255
2	+0.979 4384	+0.977 8132	+ 166	+0.184 1441	+0.191 8957	- 777	+0.079 8722	+0.083 2344	- 249
3	+0.976 1155	+0.974 3456	+ 181	+0.199 6328	+0.207 3547	- 781	+0.086 5903	+0.089 9397	- 243

FOR GREENWICH MEAN NOON AND MIDNIGHT.

Date.	X True Equinox.		Reduc. to Mean Eq'x of Jan. 0.	Y True Equinox.		Reduc. to Mean Eq'x of Jan. 0.	Z True Equinox.		Reduc. to Mean Eq'x of Jan. 0.
	Noon.	Midnight.		Noon.	Midnight.		Noon.	Midnight.	
Apr. 1	+0.982 4706	+0.980 9909	+ 152	+0.168 5995	+0.176 3785	- 773	+0.073 1300	+0.076 5040	- 255
2	0.979 4384	0.977 8132	166	0.184 1441	0.191 8957	777	0.079 8722	0.083 2344	249
3	0.976 1155	0.974 3456	181	0.199 6328	0.207 3547	781	0.086 5903	0.089 9397	243
4	0.972 5036	0.970 5897	196	0.215 0608	0.222 7506	785	0.093 2823	0.096 6179	237
5	0.968 6043	0.966 5476	211	0.230 4236	0.238 0791	789	0.099 9461	0.103 2668	230
6	+0.964 4197	+0.962 2208	+ 226	+0.245 7167	+0.253 3358	- 792	+0.106 5798	+0.109 8849	- 224
7	0.959 9513	0.957 6113	242	0.260 9359	0.268 5165	795	0.113 1818	0.116 4702	218
8	0.955 2012	0.952 7211	257	0.276 0771	0.283 6171	798	0.119 7500	0.123 0209	212
9	0.950 1713	0.947 5520	272	0.291 1361	0.298 6336	800	0.126 2827	0.129 5352	205
10	0.944 8635	0.942 1058	288	0.306 1090	0.313 5620	802	0.132 7781	0.136 0112	199
11	+0.939 2793	+0.936 3842	+ 303	+0.320 9919	+0.328 3984	- 804	+0.139 2344	+0.142 4474	- 192
12	0.933 4208	0.930 3893	319	0.335 7809	0.343 1389	806	0.145 6501	0.148 8421	185
13	0.927 2898	0.924 1226	334	0.350 4719	0.357 7795	807	0.152 0233	0.155 1934	178
14	0.920 8879	0.917 5860	350	0.365 0611	0.372 3163	809	0.158 3522	0.161 4995	171
15	0.914 2170	0.910 7813	366	0.379 5446	0.386 7454	810	0.164 6351	0.167 7588	165
16	+0.907 2790	+0.903 7104	+ 382	+0.393 9182	+0.401 0626	- 811	+0.170 8703	+0.173 9694	- 158
17	0.900 0758	0.896 3754	397	0.408 1780	0.415 2639	812	0.177 0559	0.180 1296	150
18	0.892 6094	0.888 7783	413	0.422 3199	0.429 3454	812	0.183 1902	0.186 2376	143
19	0.884 8821	0.880 9211	429	0.436 3399	0.443 3028	812	0.189 2715	0.192 2917	136
20	0.876 8957	0.872 8062	445	0.450 2337	0.457 1321	813	0.195 2980	0.198 2901	128
21	+0.868 6529	+0.864 4360	+ 461	+0.463 9974	+0.470 8291	- 812	+0.201 2678	+0.204 2309	- 121
22	0.860 1559	0.855 8128	477	0.477 6268	0.484 3899	811	0.207 1793	0.210 1127	113
23	0.851 4070	0.846 9391	494	0.491 1180	0.497 8105	810	0.213 0308	0.215 9334	105
24	0.842 4092	0.837 8176	510	0.504 4669	0.511 0867	809	0.218 8204	0.221 6914	97
25	0.833 1647	0.828 4509	526	0.517 6694	0.524 2143	808	0.224 5463	0.227 3849	88
26	+0.823 6765	+0.818 8420	+ 542	+0.530 7211	+0.537 1893	- 806	+0.230 2070	+0.233 0123	- 81
27	0.813 9478	0.808 9942	559	0.543 6183	0.550 0076	804	0.235 8006	0.238 5715	74
28	0.803 9816	0.798 9104	575	0.556 3568	0.562 6654	802	0.241 3254	0.244 0615	66
29	0.793 7812	0.788 5944	591	0.568 9329	0.575 1588	800	0.246 7799	0.249 4803	58
30	0.783 3504	0.778 0496	607	0.581 3427	0.587 4842	797	0.252 1624	0.254 8262	50
May 1	+0.772 6926	+0.767 2797	+ 624	+0.593 5829	+0.599 6382	- 794	+0.257 4714	+0.260 0978	- 41
2	0.761 8114	0.756 2883	640	0.605 6497	0.611 6170	791	0.262 7053	0.265 2937	33
3	0.750 7107	0.745 0792	657	0.617 5398	0.623 4177	788	0.267 8629	0.270 4126	25
4	0.739 3942	0.733 6562	673	0.629 2503	0.635 0372	784	0.272 9427	0.275 4529	16
5	0.727 8657	0.722 0231	689	0.640 7781	0.646 4726	780	0.277 9434	0.280 4137	- 8
6	+0.716 1288	+0.710 1833	+ 706	+0.652 1203	+0.657 7209	- 775	+0.282 8637	+0.285 2933	+ 1
7	0.704 1871	0.698 1407	722	0.663 2741	0.668 7795	770	0.287 7024	0.290 0908	9
8	0.692 0446	0.685 8990	738	0.674 2369	0.679 6458	765	0.292 4583	0.294 8048	18
9	0.679 7045	0.673 4615	755	0.685 0060	0.690 3171	760	0.297 1301	0.299 4342	27
10	0.667 1705	0.660 8319	771	0.695 5788	0.700 7907	755	0.301 7169	0.303 9780	36
11	+0.654 4462	+0.648 0137	+ 787	+0.705 9525	+0.711 0640	- 749	+0.306 2173	+0.308 4347	+ 44
12	0.641 5349	0.635 0103	803	0.716 1248	0.721 1346	742	0.310 6301	0.312 8033	53
13	0.628 4404	0.621 8255	819	0.726 0931	0.730 9998	736	0.314 9543	0.317 0828	62
14	0.615 1660	0.608 4625	835	0.735 8544	0.740 6567	729	0.319 1887	0.321 2717	71
15	0.601 7154	0.594 9253	852	0.745 4064	0.750 1030	722	0.323 3321	0.325 3693	80
16	+0.588 0925	+0.581 2175	+ 868	+0.754 7463	+0.759 3359	- 715	+0.327 3834	+0.329 3741	+ 39
17	+0.574 3008	+0.567 3428	+ 884	+0.763 8716	+0.768 3530	- 707	+0.331 3414	+0.333 2851	+ 98

FOR GREENWICH MEAN NOON AND MIDNIGHT.

Date.	X True Equinox.		Reduc. to Mean Eq'x of Jan. o.	Y True Equinox.		Reduc. to Mean Eq'x of Jan. o.	Z True Equinox.		Reduc. to Mean Eq'x of Jan. o.
	Noon.	Midnight		Noon.	Midnight.		Noon.	Midnight.	
May 17	+0.574 3008	+0.567 3428	+ 884	+0.763 8716	+0.768 3530	- 707	+0.331 3414	+0.333 2851	+ 98
18	0.560 3440	0.553 3049	900	0.772 7797	0.777 1514	699	0.335 2051	0.337 1012	107
19	0.546 2260	0.539 1079	916	0.781 4679	0.785 7288	690	0.338 9733	0.340 8212	116
20	0.531 9510	0.524 7557	931	0.789 9338	0.794 0826	681	0.342 6448	0.344 4441	126
21	0.517 5226	0.510 2521	946	0.798 1749	0.802 2103	672	0.346 2188	0.347 9689	135
22	+0.502 9449	+0.495 6015	+ 961	+0.806 1886	+0.810 1093	- 663	+0.349 6941	+0.351 3944	+ 145
23	0.488 2223	0.480 8079	977	0.813 9723	0.817 7772	653	0.353 0696	0.354 7196	154
24	0.473 3588	0.465 8757	992	0.821 5237	0.825 2115	643	0.356 3443	0.357 9435	164
25	0.458 3591	0.450 8096	1007	0.828 8402	0.832 4097	632	0.359 5172	0.361 0652	173
26	0.443 2277	0.435 6140	1023	0.835 9196	0.839 3698	621	0.362 5873	0.364 0836	182
27	+0.427 9692	+0.420 2938	+ 1038	+0.842 7600	+0.846 0898	- 610	+0.365 5539	+0.366 9981	+ 191
28	0.412 5885	0.404 8539	1052	0.849 3590	0.852 5674	598	0.368 4160	0.369 8076	200
29	0.397 0905	0.389 2990	1067	0.855 7147	0.858 8009	586	0.371 1727	0.372 5113	210
30	0.381 4801	0.373 6343	1081	0.861 8257	0.864 7890	574	0.373 8234	0.375 1088	219
31	0.365 7623	0.357 8646	1095	0.867 6906	0.870 5303	561	0.376 3675	0.377 5994	228
June 1	+0.349 9418	+0.341 9945	+ 1109	+0.873 3080	+0.876 0235	- 547	+0.378 8044	+0.379 9825	+ 238
2	0.334 0234	0.326 0290	1123	0.878 6766	0.881 2673	534	0.381 1336	0.382 2577	247
3	0.318 0120	0.309 9728	1137	0.883 7955	0.886 2610	520	0.383 3546	0.384 4243	257
4	0.301 9120	0.293 8303	1151	0.888 6636	0.891 0034	506	0.385 4667	0.386 4819	266
5	0.285 7282	0.277 6063	1164	0.893 2802	0.895 4939	492	0.387 4699	0.388 4305	276
6	+0.269 4651	+0.261 3051	+ 1177	+0.897 6443	+0.899 7314	- 477	+0.389 3636	+0.390 2692	+ 285
7	0.253 1269	0.244 9311	1190	0.901 7551	0.903 7152	462	0.391 1473	0.391 9978	294
8	0.236 7182	0.228 4887	1202	0.905 6116	0.907 4444	446	0.392 8206	0.393 6158	304
9	0.220 2433	0.211 9825	1214	0.909 2133	0.910 9183	430	0.394 3833	0.395 1230	314
10	0.203 7068	0.195 4167	1226	0.912 5593	0.914 1361	414	0.395 8349	0.396 5189	323
11	+0.187 1128	+0.178 7956	+ 1238	+0.915 6486	+0.917 0968	- 398	+0.397 1750	+0.397 8032	+ 332
12	0.170 4657	0.162 1236	1250	0.918 4806	0.919 7998	381	0.398 4035	0.398 9757	342
13	0.153 7700	0.145 4054	1261	0.921 0544	0.922 2443	363	0.399 5199	0.400 0358	351
14	0.137 0303	0.128 6453	1272	0.923 3693	0.924 4294	345	0.400 5236	0.400 9833	360
15	0.120 2509	0.111 8478	1282	0.925 4245	0.926 3545	327	0.401 4147	0.401 8178	370
16	+0.103 4364	+0.095 0174	+ 1293	+0.927 2194	+0.928 0190	- 309	+0.402 1927	+0.402 5393	+ 379
17	0.086 5914	0.078 1589	1303	0.928 7533	0.929 4221	290	0.402 8575	0.403 1472	388
18	0.069 7205	0.061 2767	1312	0.930 0255	0.930 5634	271	0.403 4086	0.403 6416	398
19	0.052 8282	0.044 3756	1322	0.931 0356	0.931 4421	251	0.403 8461	0.404 0221	407
20	0.035 9195	0.027 4605	1331	0.931 7827	0.932 0575	231	0.404 1695	0.404 2883	416
21	+0.018 9991	+0.010 5360	+ 1340	+0.932 2664	+0.932 4094	- 211	+0.404 3786	+0.404 4404	+ 425
22	+0.002 0719	-0.006 3927	1348	0.932 4864	0.932 4973	191	0.404 4735	0.404 4780	434
23	-0.014 8570	0.023 3204	1356	0.932 4421	0.932 3209	171	0.404 4538	0.404 4010	443
24	0.031 7823	0.040 2421	1363	0.932 1337	0.931 8804	150	0.404 3197	0.404 2098	452
25	0.048 6990	0.057 1524	1370	0.931 5610	0.931 1754	129	0.404 0712	0.403 9040	461
26	-0.065 6017	-0.074 0462	+ 1377	+0.930 7239	+0.930 2065	- 107	+0.403 7081	+0.403 4838	+ 470
27	0.082 4852	0.090 9181	1384	0.929 6232	0.928 9740	85	0.403 2309	0.402 9495	479
28	0.099 3443	0.107 7633	1390	0.928 2592	0.927 4788	63	0.402 6396	0.402 3013	488
29	0.116 1743	0.124 5767	1395	0.926 6328	0.925 7213	41	0.401 9346	0.401 5396	497
30	0.132 9698	0.141 3531	1399	0.924 7446	0.923 7027	- 18	0.401 1162	0.400 6646	506
July 1	-0.149 7260	-0.158 0880	+ 1404	+0.922 5958	+0.921 4240	+ 5	+0.400 1849	+0.399 6770	+ 514
2	-0.166 4385	-0.174 7769	+ 1408	+0.920 1874	+0.918 8860	+ 29	+0.399 1410	+0.398 5769	+ 522

FOR GREENWICH MEAN NOON AND MIDNIGHT.

Date.	X True Equinox.		Reduc. to Mean Eq'x of Jan. o.	Y True Equinox.		Reduc. to Mean Eq'x of Jan. o.	Z True Equinox.		Reduc. to Mean Eq'x of Jan. o.
	Noon.	Midnight.		Noon.	Midnight.		Noon.	Midnight.	
July 1	-0.149 7260	-0.158 0880	+ 1404	+0.922 5958	+0.921 4240	+ 5	+0.400 1849	+0.399 6770	+ 514
2	0.166 4385	0.174 7769	1408	0.920 1874	0.918 8860	29	0.399 1410	0.398 5769	522
3	0.183 1026	0.191 4149	1411	0.917 5201	0.916 0898	52	0.397 9848	0.397 3647	530
4	0.199 7136	0.207 9979	1415	0.914 5953	0.913 0367	75	0.396 7168	0.396 0411	539
5	0.216 2673	0.224 5212	1418	0.911 4140	0.909 7275	99	0.395 3376	0.394 6063	547
6	-0.232 7592	-0.240 9806	+ 1420	+0.907 9773	+0.906 1635	+ 123	+0.393 8473	+0.393 0607	+ 555
7	0.249 1850	0.257 3718	1421	0.904 2862	0.902 3456	147	0.392 2466	0.391 4050	563
8	0.265 5404	0.273 6904	1422	0.900 3419	0.898 2751	172	0.390 5360	0.389 6396	571
9	0.281 8211	0.289 9321	1423	0.896 1454	0.893 9530	196	0.388 7159	0.387 7649	579
10	0.298 0228	0.306 0926	1423	0.891 6980	0.889 3805	221	0.386 7867	0.385 7813	587
11	-0.314 1411	-0.322 1677	+ 1423	+0.887 0007	+0.884 5587	+ 246	+0.384 7489	+0.383 6896	+ 595
12	0.330 1718	0.338 1529	1422	0.882 0547	0.879 4889	271	0.382 6033	0.381 4902	603
13	0.346 1105	0.354 0440	1421	0.876 8613	0.874 1720	296	0.380 3502	0.379 1835	610
14	0.361 9530	0.369 8368	1419	0.871 4213	0.868 6093	321	0.377 9901	0.376 7701	618
15	0.377 6950	0.385 5270	1417	0.865 7363	0.862 8023	347	0.375 5236	0.374 2506	625
16	-0.393 3322	-0.401 1101	+ 1414	+0.859 8075	+0.856 7521	+ 372	+0.372 9513	+0.371 6257	+ 633
17	0.408 8601	0.416 5816	1410	0.853 6361	0.850 4600	398	0.370 2738	0.368 8958	640
18	0.424 2742	0.431 9372	1406	0.847 2238	0.843 9276	423	0.367 4917	0.366 0617	647
19	0.439 5701	0.447 1722	1402	0.840 5716	0.837 1560	449	0.364 6058	0.363 1241	654
20	0.454 7431	0.462 2822	1397	0.833 6811	0.830 1470	475	0.361 6166	0.360 0835	661
21	-0.469 7889	-0.477 2626	+ 1391	+0.826 5541	+0.822 9024	+ 501	+0.358 5249	+0.356 9409	+ 668
22	0.484 7027	0.492 1085	1385	0.819 1923	0.815 4239	527	0.355 3315	0.353 6970	674
23	0.499 4795	0.506 8152	1378	0.811 5975	0.807 7135	553	0.352 0374	0.350 3527	681
24	0.514 1149	0.521 3781	1371	0.803 7720	0.799 7734	579	0.348 6432	0.346 9090	687
25	0.528 6043	0.535 7928	1363	0.795 7180	0.791 6061	604	0.345 1501	0.343 3668	694
26	-0.542 9431	-0.550 0546	+ 1354	+0.787 4381	+0.783 2142	+ 630	+0.341 5591	+0.339 7272	+ 700
27	0.557 1269	0.564 1593	1345	0.778 9348	0.774 6002	656	0.337 8713	0.335 9916	706
28	0.571 1514	0.578 1027	1336	0.770 2109	0.765 7671	682	0.334 0881	0.332 1609	711
29	0.585 0128	0.591 8811	1325	0.761 2692	0.756 7176	707	0.330 2103	0.328 2364	716
30	0.598 7071	0.605 4904	1314	0.752 1127	0.747 4547	733	0.326 2393	0.324 2192	722
31	-0.612 2305	-0.618 9270	+ 1303	+0.742 7441	+0.737 9811	+ 759	+0.322 1763	+0.320 1107	+ 728
Aug. 1	0.625 5795	0.632 1874	1292	0.733 1662	0.728 2998	784	0.318 0225	0.315 9119	734
2	0.638 7504	0.645 2680	1279	0.723 3822	0.718 4137	809	0.313 7790	0.311 6241	739
3	0.651 7398	0.658 1653	1266	0.713 3947	0.708 3255	834	0.309 4472	0.307 2486	744
4	0.664 5441	0.670 8758	1253	0.703 2064	0.698 0378	859	0.305 0282	0.302 7864	748
5	-0.677 1600	-0.683 3963	+ 1240	+0.692 8200	+0.687 5534	+ 884	+0.300 5232	+0.298 2388	+ 753
6	0.689 5842	0.695 7233	1225	0.682 2385	0.676 8755	909	0.295 9334	0.293 6071	758
7	0.701 8133	0.707 8537	1210	0.671 4649	0.666 0069	934	0.291 2600	0.288 8924	762
8	0.713 8440	0.719 7840	1194	0.660 5019	0.654 9502	958	0.286 5044	0.284 0962	766
9	0.725 6732	0.731 5111	1179	0.649 3523	0.643 7084	982	0.281 6678	0.279 2194	770
10	-0.737 2974	-0.743 0317	+ 1161	+0.638 0190	+0.632 2844	+ 1006	+0.276 7513	+0.274 2635	+ 774
11	0.748 7135	0.754 3425	1144	0.626 5049	0.620 6810	1030	0.271 7563	0.269 2298	778
12	0.759 9182	0.765 4402	1127	0.614 8129	0.608 9010	1054	0.266 6842	0.264 1195	781
13	0.770 9082	0.776 3217	1109	0.602 9457	0.596 9475	1077	0.261 5360	0.258 9339	784
14	0.781 6803	0.786 9836	1090	0.590 9066	0.584 8234	1100	0.256 3133	0.253 6744	787
15	-0.792 2312	-0.797 4226	+ 1071	+0.578 6984	+0.572 5318	+ 1123	+0.251 0173	+0.248 3422	+ 790
16	-0.802 5574	-0.807 6353	+ 1051	+0.566 3241	+0.560 0758	+ 1145	+0.245 6493	+0.242 9389	+ 793

FOR GREENWICH MEAN NOON AND MIDNIGHT.

Date.	X True Equinox.		Reduc. to Mean Eq'x of Jan. o.	Y True Equinox.		Reduc. to Mean Eq'x of Jan. o.	Z True Equinox.		Reduc. to Mean Eq'x of Jan. o.
	Noon.	Midnight.		Noon.	Midnight.		Noon.	Midnight.	
Aug. 16	-0.802 5574	-0.807 6353	+ 1051	+0.566 3241	+0.560 0758	+ 1145	+0.245 6493	+0.242 9389	+ 793
17	0.812 6559	0.817 6187	1031	0.553 7872	0.547 4587	1168	0.240 2110	0.237 4658	796
18	0.822 5232	0.827 3690	1010	0.541 0907	0.534 6836	1190	0.234 7036	0.231 9245	799
19	0.832 1558	0.836 8831	989	0.528 2380	0.521 7543	1211	0.229 1287	0.226 3164	801
20	0.841 5506	0.846 1577	968	0.515 2330	0.508 6744	1232	0.223 4877	0.220 6429	803
21	-0.850 7041	-0.855 1894	+ 946	+0.502 0790	+0.495 4474	+ 1253	+0.217 7823	+0.214 9060	+ 805
22	0.859 6133	0.863 9753	924	0.488 7800	0.482 0774	1274	0.212 0142	0.209 1072	806
23	0.868 2751	0.872 5122	901	0.475 3402	0.468 5688	1295	0.206 1852	0.203 2484	808
24	0.876 6865	0.880 7976	877	0.461 7637	0.454 9255	1315	0.200 2969	0.197 3311	809
25	0.884 8451	0.888 8288	853	0.448 0546	0.441 1517	1334	0.194 3512	0.191 3573	810
26	-0.892 7483	-0.896 6033	+ 829	+0.434 2172	+0.427 2518	+ 1353	+0.188 3498	+0.185 3289	+ 811
27	0.900 3937	0.904 1191	805	0.420 2559	0.413 2301	1372	0.182 2947	0.179 2476	812
28	0.907 7793	0.911 3740	780	0.406 1748	0.399 0907	1391	0.176 1876	0.173 1151	812
29	0.914 9031	0.918 3662	755	0.391 9783	0.384 8381	1409	0.170 0302	0.166 9332	813
30	0.921 7631	0.925 0936	729	0.377 6706	0.370 4763	1427	0.163 8244	0.160 7039	813
31	-0.928 3575	-0.931 5546	+ 703	+0.363 2556	+0.356 0091	+ 1444	+0.157 5719	+0.154 4288	+ 813
Sept. 1	0.934 6847	0.937 7475	677	0.348 7374	0.341 4409	1461	0.151 2746	0.148 1097	812
2	0.940 7428	0.943 6704	650	0.334 1202	0.326 7757	1477	0.144 9342	0.141 7484	812
3	0.946 5301	0.949 3218	623	0.319 4080	0.312 0175	1493	0.138 5524	0.135 3465	811
4	0.952 0453	0.954 7003	595	0.304 6048	0.297 1704	1509	0.132 1310	0.128 9061	810
5	-0.957 2867	-0.959 8043	+ 567	+0.289 7149	+0.282 2386	+ 1524	+0.125 6719	+0.122 4287	+ 809
6	0.962 2528	0.964 6321	539	0.274 7421	0.267 2259	1539	0.119 1766	0.115 9161	808
7	0.966 9419	0.969 1822	511	0.259 6904	0.252 1362	1553	0.112 6472	0.109 3701	806
8	0.971 3527	0.973 4533	482	0.244 5638	0.236 9737	1567	0.106 0851	0.102 7924	804
9	0.975 4838	0.977 4440	453	0.229 3663	0.221 7422	1580	0.099 4923	0.096 1849	802
10	-0.979 3338	-0.981 1529	+ 424	+0.214 1020	+0.206 4461	+ 1594	+0.092 8706	+0.089 5494	+ 800
11	0.982 9012	0.984 5784	395	0.198 7751	0.191 0893	1606	0.086 2217	0.082 8877	798
12	0.986 1845	0.987 7193	365	0.183 3894	0.175 6758	1617	0.079 5475	0.076 2014	795
13	0.989 1825	0.990 5739	335	0.167 9491	0.160 2099	1629	0.072 8497	0.069 4925	793
14	0.991 8935	0.993 1411	305	0.152 4586	0.144 6958	1640	0.066 1302	0.062 7629	790
15	-0.994 3164	-0.995 4192	+ 274	+0.136 9221	+0.129 1380	+ 1650	+0.059 3909	+0.056 0145	+ 787
16	0.996 4495	0.997 4071	243	0.121 3441	0.113 5409	1660	0.052 6339	0.049 2493	783
17	0.998 2918	0.999 1035	212	0.105 7291	0.097 9092	1670	0.045 8610	0.042 4692	779
18	0.999 8420	1.000 5072	181	0.090 0818	0.082 2476	1679	0.039 0742	0.035 6763	775
19	1.001 0991	1.001 6175	150	0.074 4071	0.066 5609	1687	0.032 2757	0.028 8726	771
20	-1.002 0623	-1.002 4334	+ 119	+0.058 7097	+0.050 8541	+ 1695	+0.025 4674	+0.022 0602	+ 767
21	1.002 7308	1.002 9544	87	0.042 9947	0.035 1323	1702	0.018 6515	0.015 2415	762
22	1.003 1041	1.003 1799	55	0.027 2674	0.019 4003	1709	0.011 8303	0.008 4183	757
23	1.003 1819	1.003 1101	+ 23	+0.011 5324	+0.003 6636	1716	+0.005 0057	+0.001 5929	752
24	1.002 9644	1.002 7448	- 9	-0.004 2053	-0.012 0735	1721	-0.001 8200	-0.005 2326	747
25	-1.002 4514	-1.002 0841	- 41	-0.019 9405	-0.027 8057	+ 1726	-0.008 6448	-0.012 0562	+ 741
26	1.001 6431	1.001 1284	73	0.035 6685	0.043 5284	1732	0.015 4666	0.018 8758	736
27	1.000 5400	0.999 8780	105	0.051 3848	0.059 2370	1737	0.022 2835	0.025 6894	730
28	0.999 1424	0.998 3334	138	0.067 0845	0.074 9266	1741	0.029 0933	0.032 4948	724
29	0.997 4511	0.996 4954	171	0.082 7629	0.090 5927	1744	0.035 8939	0.039 2902	717
30	-0.995 4664	-0.994 3642	- 203	-0.098 4156	-0.106 2309	+ 1747	-0.042 6836	-0.046 0738	+ 710
Oct. 1	-0.993 1888	-0.991 9404	- 236	-0.114 0381	-0.121 8366	+ 1750	-0.049 4604	-0.052 8433	+ 704

FOR GREENWICH MEAN NOON AND MIDNIGHT.

Date.	X True Equinox.		Reduc. to Mean Eq'x of Jan. 0.	Y True Equinox.		Reduc. to Mean Eq'x of Jan. 0.	Z True Equinox.		Reduc. to Mean Eq'x of Jan. 0.
	Noon.	Midnight.		Noon.	Midnight.		Noon.	Midnight.	
Oct. 1	-0.993 1888	-0.991 9404	- 236	-0.114 0381	-0.121 8366	+ 1750	-0.049 4604	-0.052 8433	+ 704
2	0.990 6190	0.989 2247	269	0.129 6258	0.137 4052	1752	0.056 2222	0.059 5969	697
3	0.987 7577	0.986 2181	302	0.145 1743	0.152 9324	1753	0.062 9671	0.066 3325	690
4	0.984 6060	0.982 9214	335	0.160 6790	0.168 4138	1753	0.069 6930	0.073 0484	682
5	0.981 1643	0.979 3350	368	0.176 1361	0.183 8453	1754	0.076 3984	0.079 7428	674
6	-0.977 4335	-0.975 4600	- 400	-0.191 5409	-0.199 2224	+ 1754	-0.083 0812	-0.086 4135	+ 666
7	0.973 4146	0.971 2974	433	0.206 8893	0.214 5410	1753	0.089 7394	0.093 0587	658
8	0.969 1086	0.966 8482	466	0.222 1769	0.229 7966	1752	0.096 3712	0.099 6766	650
9	0.964 5162	0.962 1128	499	0.237 3995	0.244 9850	1750	0.102 9746	0.106 2652	641
10	0.959 6381	0.957 0923	532	0.252 5527	0.260 1019	1748	0.109 5480	0.112 8227	632
11	-0.954 4755	-0.951 7877	- 565	-0.267 6322	-0.275 1430	+ 1745	-0.116 0892	-0.119 3472	+ 623
12	0.949 0291	0.946 1999	598	0.282 6337	0.290 1039	1742	0.122 5964	0.125 8366	614
13	0.943 3001	0.940 3298	631	0.297 5528	0.304 9798	1738	0.129 0676	0.132 2891	605
14	0.937 2892	0.934 1784	664	0.312 3845	0.319 7663	1734	0.135 5009	0.138 7026	595
15	0.930 9977	0.927 7472	697	0.327 1245	0.334 4586	1729	0.141 8941	0.145 0751	585
16	-0.924 4271	-0.921 0375	- 730	-0.341 7681	-0.349 0523	+ 1724	-0.148 2454	-0.151 4046	+ 575
17	0.917 5787	0.914 0508	763	0.356 3105	0.363 5423	1718	0.154 5526	0.157 6891	565
18	0.910 4541	0.906 7888	795	0.370 7469	0.377 9238	1712	0.160 8139	0.163 9265	555
19	0.903 0552	0.899 2535	828	0.385 0724	0.392 1921	1705	0.167 0269	0.170 1147	544
20	0.895 3839	0.891 4469	860	0.399 2823	0.406 3424	1698	0.173 1898	0.176 2518	533
21	-0.887 4426	-0.883 3714	- 893	-0.413 3718	-0.420 3699	+ 1690	-0.179 3006	-0.182 3357	+ 522
22	0.879 2335	0.875 0293	925	0.427 3362	0.434 2701	1682	0.185 3571	0.188 3645	511
23	0.870 7592	0.866 4234	957	0.441 1710	0.448 0385	1673	0.191 3577	0.194 3363	500
24	0.862 0223	0.857 5563	989	0.454 8719	0.461 6707	1663	0.197 3002	0.200 2491	488
25	0.853 0258	0.848 4310	1021	0.468 4343	0.475 1623	1653	0.203 1828	0.206 1011	476
26	-0.843 7724	-0.839 0502	- 1053	-0.481 8541	-0.488 5093	+ 1643	-0.209 0037	-0.211 8904	+ 464
27	0.834 2649	0.829 4169	1085	0.495 1273	0.501 7078	1632	0.214 7611	0.217 6155	452
28	0.824 5064	0.819 5339	1117	0.508 2501	0.514 7537	1621	0.220 4535	0.223 2746	440
29	0.814 4998	0.809 4044	1148	0.521 2181	0.527 6429	1609	0.226 0788	0.228 8658	427
30	0.804 2482	0.799 0314	1180	0.534 0277	0.540 3719	1597	0.231 6355	0.234 3877	415
31	-0.793 7546	-0.788 4180	- 1211	-0.546 6751	-0.552 9368	+ 1584	-0.237 1220	-0.239 8383	+ 402
Nov. 1	0.783 0222	0.777 5675	1242	0.559 1565	0.565 3339	1570	0.242 5364	0.245 2162	389
2	0.772 0542	0.766 4828	1273	0.571 4684	0.577 5597	1556	0.247 8774	0.250 5199	376
3	0.760 8537	0.755 1673	1303	0.583 6072	0.589 6106	1542	0.253 1434	0.255 7477	362
4	0.749 4240	0.743 6241	1334	0.595 5694	0.601 4833	1527	0.258 3327	0.260 8982	349
5	-0.737 7680	-0.731 8563	- 1363	-0.607 3518	-0.613 1744	+ 1511	-0.263 4439	-0.265 9697	+ 336
6	0.725 8892	0.719 8671	1393	0.618 9507	0.624 6803	1495	0.268 4754	0.270 9608	322
7	0.713 7905	0.707 6597	1422	0.630 3628	0.635 9976	1478	0.273 4258	0.275 8700	307
8	0.701 4752	0.695 2372	1452	0.641 5845	0.647 1230	1461	0.278 2934	0.280 6958	292
9	0.688 9462	0.682 6026	1481	0.652 6127	0.658 0531	1443	0.283 0770	0.285 4367	278
10	-0.676 2069	-0.669 7595	- 1510	-0.663 4437	-0.668 7841	+ 1425	-0.287 7748	-0.290 0910	+ 264
11	0.663 2608	0.656 7112	1539	0.674 0739	0.679 3126	1406	0.292 3853	0.294 6574	249
12	0.650 1111	0.643 4611	1568	0.684 4997	0.689 6348	1387	0.296 9071	0.299 1342	234
13	0.636 7616	0.630 0130	1596	0.694 7174	0.699 7471	1367	0.301 3385	0.303 5198	219
14	0.623 2159	0.616 3707	1624	0.704 7235	0.709 6461	1347	0.305 6780	0.307 8128	204
15	-0.609 4779	-0.602 5381	- 1651	-0.714 5144	-0.719 3281	+ 1326	-0.309 9240	-0.312 0116	+ 189
16	-0.595 5517	-0.588 5193	- 1679	-0.724 0867	-0.728 7897	+ 1305	-0.314 0753	-0.316 1149	+ 174

FOR GREENWICH MEAN NOON AND MIDNIGHT.

Date.	X		Reduc. to Mean Eq'x of Jan. o.	Y		Reduc. to Mean Eq'x of Jan. o.	Z		Reduc. to Mean Eq'x of Jan. o.
	True Equinox.			True Equinox.			True Equinox.		
	Noon.	Midnight.	Noon.	Noon.	Midnight.	Noon.	Noon.	Midnight.	Noon.
Nov. 16	-0.595 5517	-0.588 5193	-1679	-0.724 0867	-0.728 7897	+ 1305	-0.314 0753	-0.316 1149	+ 174
17	0.581 4415	0.574 3189	1705	0.733 4367	0.738 0273	1283	0.318 1303	0.320 1212	158
18	0.567 1519	0.559 9411	1732	0.742 5612	0.747 0378	1261	0.322 0874	0.324 0289	143
19	0.552 6872	0.545 3906	1758	0.751 4569	0.755 8181	1238	0.325 9454	0.327 8369	127
20	0.538 0520	0.530 6721	1784	0.760 1209	0.764 3650	1215	0.329 7031	0.331 5438	111
21	-0.523 2514	-0.515 7905	-1809	-0.768 5501	-0.772 6758	+ 1191	-0.333 3590	-0.335 1485	+ 95
22	0.508 2899	0.500 7503	1834	0.776 7418	0.780 7477	1167	0.336 9121	0.338 6497	79
23	0.493 1723	0.485 5566	1860	0.784 6932	0.788 5781	1142	0.340 3611	0.342 0463	64
24	0.477 9037	0.470 2142	1885	0.792 4020	0.796 1648	1116	0.343 7050	0.345 3372	48
25	0.462 4888	0.454 7281	1908	0.799 8660	0.803 5053	1090	0.346 9428	0.348 5216	32
26	-0.446 9326	-0.439 1031	-1932	-0.807 0826	-0.810 5975	+ 1063	-0.350 0735	-0.351 5984	+ 15
27	0.431 2400	0.423 3440	1955	0.814 0498	0.817 4393	1036	0.353 0961	0.354 5666	- 2
28	0.415 4157	0.407 4558	1977	0.820 7657	0.824 0287	1008	0.356 0097	0.357 4253	18
29	0.399 4649	0.391 4435	2000	0.827 2282	0.830 3638	980	0.358 8134	0.360 1738	34
30	0.383 3923	0.375 3120	2022	0.833 4354	0.836 4428	952	0.361 5064	0.362 8112	51
Dec. 1	-0.367 2031	-0.359 0662	-2043	-0.839 3857	-0.842 2641	+ 923	-0.364 0880	-0.365 3368	- 68
2	0.350 9018	0.342 7106	2064	0.845 0777	0.847 8262	893	0.366 5575	0.367 7499	84
3	0.334 4933	0.326 2504	2084	0.850 5095	0.853 1273	863	0.368 9140	0.370 0496	101
4	0.317 9825	0.309 6902	2104	0.855 6795	0.858 1660	833	0.371 1568	0.372 2355	118
5	0.301 3740	0.293 0346	2123	0.860 5866	0.862 9411	802	0.373 2855	0.374 3068	134
6	-0.284 6725	-0.276 2883	-2142	-0.865 2292	-0.867 4509	+ 771	-0.375 2993	-0.376 2628	-151
7	0.267 8826	0.259 4560	2160	0.869 6058	0.871 6937	739	0.377 1974	0.378 1029	168
8	0.251 0091	0.242 5425	2178	0.873 7145	0.875 6680	706	0.378 9793	0.379 8264	185
9	0.234 0569	0.225 5527	2195	0.877 5539	0.879 3721	673	0.380 6442	0.381 4326	202
10	0.217 0307	0.208 4915	2212	0.881 1225	0.882 8047	640	0.382 1916	0.382 9209	219
11	-0.199 9357	-0.191 3640	-2228	-0.884 4187	-0.885 9642	+ 606	-0.383 6206	-0.384 2906	-236
12	0.182 7770	0.174 1754	2243	0.887 4411	0.888 8491	572	0.384 9309	0.385 5413	253
13	0.165 5599	0.156 9311	2257	0.890 1881	0.891 4579	537	0.386 1217	0.386 6722	270
14	0.148 2898	0.139 6366	2272	0.892 6584	0.893 7895	502	0.387 1926	0.387 6829	287
15	0.130 9722	0.122 2973	2286	0.894 8510	0.895 8427	466	0.388 1430	0.388 5729	304
16	-0.113 6127	-0.104 9191	-2298	-0.896 7646	-0.897 6166	+ 430	-0.388 9726	-0.389 3420	-321
17	0.096 2171	0.087 5075	2310	0.898 3986	0.899 1104	394	0.389 6810	0.389 9897	338
18	0.078 7909	0.070 0681	2321	0.899 7520	0.900 3235	357	0.390 2679	0.390 5157	355
19	0.061 3400	0.052 6072	2332	0.900 8246	0.901 2554	320	0.390 7330	0.390 9198	372
20	0.043 8703	0.035 1301	2342	0.901 6157	0.901 9056	283	0.391 0762	0.391 2020	389
21	-0.026 3872	-0.017 6425	-2352	-0.902 1250	-0.902 2741	+ 245	-0.391 2973	-0.391 3621	-405
22	-0.008 8966	-0.000 1503	2360	0.902 3527	0.902 3609	207	0.391 3965	0.391 4003	422
23	+0.008 5958	+0.017 3409	2368	0.902 2987	0.902 1661	168	0.391 3735	0.391 3162	439
24	0.026 0844	0.034 8255	2375	0.901 9632	0.901 6900	129	0.391 2285	0.391 1103	456
25	0.043 5635	0.052 2979	2382	0.901 3465	0.900 9328	89	0.390 9616	0.390 7825	472
26	+0.061 0278	+0.069 7525	-2388	-0.900 4489	-0.899 8950	+ 50	-0.390 5729	-0.390 3330	-489
27	0.078 4714	0.087 1838	2392	0.899 2711	0.898 5773	+ 10	0.390 0627	0.389 7621	506
28	0.095 8891	0.104 5865	2396	0.897 8137	0.896 9803	- 30	0.389 4313	0.389 0701	522
29	0.113 2755	0.121 9553	2400	0.896 0773	0.895 1049	70	0.388 6787	0.388 2571	539
30	0.130 6253	0.139 2848	2403	0.894 0630	0.892 9518	110	0.387 8055	0.387 3238	555
31	+0.147 9332	+0.156 5699	-2404	-0.891 7715	-0.890 5221	- 151	-0.386 8120	-0.386 2703	-571
32	+0.165 1943	+0.173 8057	-2405	-0.889 2038	-0.887 8167	- 192	-0.385 6986	-0.385 0970	-587

FOR GREENWICH MEAN NOON AND MIDNIGHT.

Day of Month.	JANUARY.		Day of Month.	FEBRUARY.		Day of Month.	MARCH.	
	True Longitude.	Latitude.		True Longitude.	Latitude.		True Longitude.	Latitude.
1.0	308 17 51.0	+ 4 47 29.5	1.0	354 18 01.9	+ 2 02 26.2	1.0	3 52 24.2	+ 1 06 44.8
1.5	314 17 34.7	4 36 53.1	1.5	0 35 57.9	1 31 08.1	1.5	10 19 42.2	+ 0 32 02.8
2.0	320 18 41.2	4 23 08.4	2.0	6 56 59.9	0 58 24.3	2.0	16 49 58.7	- 0 03 22.4
2.5	326 21 28.3	4 06 21.5	2.5	13 21 28.0	+ 0 24 36.4	2.5	23 23 18.2	0 39 03.3
3.0	332 26 16.4	3 46 39.9	3.0	19 49 43.7	- 0 09 57.4	3.0	29 59 46.1	1 14 31.7
3.5	338 33 28.6	+ 3 24 12.8	3.5	26 22 09.9	- 0 44 37.0	3.5	36 39 28.2	- 1 49 17.9
4.0	344 43 30.7	2 59 10.9	4.0	32 59 09.2	1 19 10.9	4.0	43 22 30.8	2 22 52.0
4.5	350 56 50.7	2 31 46.5	4.5	39 41 02.9	1 53 05.7	4.5	50 09 00.4	2 54 43.9
5.0	357 13 58.6	2 02 13.8	5.0	46 28 10.4	2 25 51.5	5.0	56 59 02.0	3 24 23.4
5.5	3 35 26.0	1 30 48.9	5.5	53 20 47.1	2 56 57.1	5.5	63 52 39.6	3 51 21.4
6.0	10 01 44.8	+ 0 57 50.1	6.0	60 19 03.5	- 3 25 50.6	6.0	70 49 54.7	- 4 15 09.7
6.5	16 33 26.7	+ 0 23 38.0	6.5	67 23 02.9	3 51 59.2	6.5	77 50 45.0	4 35 21.8
7.0	23 11 01.8	- 0 11 23.7	7.0	74 32 40.1	4 14 50.8	7.0	84 55 04.6	4 51 33.4
7.5	29 54 57.1	0 46 48.7	7.5	81 47 40.2	4 33 54.6	7.5	92 02 42.4	5 03 23.7
8.0	36 45 34.8	1 22 07.6	8.0	89 07 36.9	4 48 42.4	8.0	99 13 21.1	5 10 35.4
8.5	43 43 10.4	- 1 56 47.7	8.5	96 31 52.8	- 4 58 49.9	8.5	106 26 37.4	- 5 12 55.7
9.0	50 47 51.1	2 30 13.9	9.0	103 59 39.2	5 03 58.4	9.0	113 42 01.9	5 10 17.3
9.5	57 59 33.1	3 01 48.8	9.5	111 29 57.1	5 03 55.8	9.5	120 58 59.1	5 02 38.8
10.0	65 18 00.3	3 30 53.0	10.0	119 01 39.4	4 58 37.8	10.0	128 16 47.6	4 50 05.5
10.5	72 42 42.7	3 56 48.0	10.5	126 33 33.2	4 48 08.8	10.5	135 34 41.9	4 32 49.3
11.0	80 12 56.6	- 4 18 56.5	11.0	134 04 22.7	- 4 32 41.5	11.0	142 51 54.0	- 4 11 08.6
11.5	87 47 43.0	4 36 44.6	11.5	141 32 53.9	4 12 37.0	11.5	150 07 34.1	3 45 28.1
12.0	95 25 50.7	4 49 43.8	12.0	148 57 56.5	3 48 23.5	12.0	157 20 53.4	3 16 17.9
12.5	103 05 58.2	4 57 33.4	12.5	156 18 27.7	3 20 34.4	12.5	164 31 05.8	2 44 12.1
13.0	110 46 37.4	5 00 00.9	13.0	163 33 34.2	2 49 47.4	13.0	171 37 28.8	2 09 47.9
13.5	118 26 17.6	- 4 57 03.9	13.5	170 42 34.1	- 2 16 42.1	13.5	178 39 25.7	- 1 33 44.2
14.0	126 03 29.5	4 48 49.7	14.0	177 44 57.2	1 41 58.2	14.0	185 36 26.4	0 56 39.6
14.5	133 36 50.2	4 35 34.4	14.5	184 40 25.3	1 06 14.2	14.5	192 28 08.5	- 0 19 11.8
15.0	141 05 06.9	4 17 42.1	15.0	191 28 51.9	- 0 30 06.4	15.0	199 14 16.8	+ 0 18 03.7
15.5	148 27 19.3	3 55 43.3	15.5	198 10 20.8	+ 0 05 52.1	15.5	205 54 44.0	0 54 34.4
16.0	155 42 41.2	- 3 30 12.5	16.0	204 45 05.0	+ 0 41 11.8	16.0	212 29 30.2	+ 1 29 51.4
16.5	162 50 41.6	3 01 46.4	16.5	211 13 24.5	1 15 26.6	16.5	218 58 42.3	2 03 29.4
17.0	169 51 03.4	2 31 02.1	17.0	217 35 46.0	1 48 14.2	17.0	225 22 33.6	2 35 06.6
17.5	176 43 43.5	1 58 36.0	17.5	223 52 40.7	2 19 15.3	17.5	231 41 22.7	3 04 25.0
18.0	183 28 49.9	1 25 02.5	18.0	230 04 43.2	2 48 13.8	18.0	237 55 32.8	3 31 09.7
18.5	190 06 40.7	- 0 50 53.4	18.5	236 12 30.3	+ 3 14 55.8	18.5	244 05 31.0	+ 3 55 08.7
19.0	196 37 41.2	- 0 16 37.7	19.0	242 16 40.2	3 39 09.5	19.0	250 11 47.7	4 16 12.5
19.5	203 02 22.9	+ 0 17 18.5	19.5	248 17 51.1	4 00 44.8	19.5	256 14 55.5	4 34 13.4
20.0	209 21 21.1	0 50 32.1	20.0	254 16 40.9	4 19 32.9	20.0	262 15 28.4	4 49 05.4
20.5	215 35 13.6	1 22 42.3	20.5	260 13 46.6	4 35 26.4	20.5	268 14 01.9	5 00 44.0
21.0	221 44 39.5	+ 1 53 30.9	21.0	266 09 43.8	+ 4 48 18.8	21.0	274 11 11.3	+ 5 09 05.6
21.5	227 50 17.6	2 22 41.4	21.5	272 05 05.9	4 58 04.2	21.5	280 07 32.6	5 14 07.5
22.0	233 52 46.4	2 49 59.1	22.0	278 00 24.3	5 04 37.9	22.0	286 03 40.8	5 15 48.0
22.5	239 52 42.7	3 15 10.7	22.5	283 56 07.6	5 07 55.9	22.5	292 00 10.2	5 14 05.9
23.0	245 50 41.2	3 38 04.0	23.0	289 52 41.7	5 07 55.1	23.0	297 57 33.4	5 09 00.9
23.5	251 47 13.8	+ 3 58 28.0	23.5	295 50 29.6	+ 5 04 33.6	23.5	303 56 21.6	+ 5 00 33.8
24.0	257 42 50.2	4 16 12.7	24.0	301 49 51.7	4 57 50.9	24.0	309 57 03.6	4 48 46.5
24.5	263 37 57.0	4 31 09.0	24.5	307 51 05.0	4 47 47.8	24.5	316 00 05.8	4 33 41.8
25.0	269 32 57.3	4 43 08.7	25.0	313 54 23.5	4 34 27.2	25.0	322 05 51.8	4 15 24.6
25.5	275 28 11.7	4 52 04.8	25.5	319 59 59.1	4 17 53.6	25.5	328 14 42.2	3 54 01.7
26.0	281 23 57.3	+ 4 57 51.5	26.0	326 08 00.9	+ 3 58 13.9	26.0	334 26 54.5	+ 3 29 42.1
26.5	287 20 29.0	5 00 24.4	26.5	332 18 36.0	3 35 37.4	26.5	340 42 42.6	3 02 37.1
27.0	293 17 59.2	4 59 40.3	27.0	338 31 49.8	3 10 16.1	27.0	347 02 16.5	2 33 01.1
27.5	299 16 38.0	4 55 38.0	27.5	344 47 46.6	2 42 24.1	27.5	353 25 43.2	2 01 11.5
28.0	305 16 34.3	4 48 17.8	28.0	351 06 29.4	2 12 18.1	28.0	359 53 05.7	1 27 28.8
28.5	311 17 55.7	+ 4 37 41.9	28.5	357 28 01.0	+ 1 40 17.8	28.5	6 24 24.0	+ 0 52 16.3
29.0	317 20 49.1	4 23 54.6	29.0	3 52 24.2	1 06 44.8	29.0	12 59 34.7	+ 0 16 00.4
29.5	323 25 21.7	4 07 02.2	29.5	10 19 42.2	+ 0 32 02.8	29.5	19 38 31.3	- 0 20 49.8
30.0	329 31 41.1	3 47 13.1	30.0	16 49 58.7	- 0 03 22.4	30.0	26 21 04.8	0 57 43.2
30.5	335 39 55.8	3 24 37.6	30.5	23 23 18.2	0 39 03.3	30.5	33 07 04.2	1 34 07.1
31.0	341 50 15.9	+ 2 59 27.8	31.0	29 59 46.1	- 1 14 31.7	31.0	39 56 16.4	- 2 09 27.8
31.5	348 02 52.8	+ 2 31 58.9	31.5	36 39 28.2	- 1 49 17.9	31.5	46 48 27.3	- 2 43 11.9

FOR GREENWICH MEAN NOON AND MIDNIGHT.

Day of Month.	APRIL.		Day of Month.	MAY.		Day of Month.	JUNE.	
	True Longitude.	Latitude.		True Longitude.	Latitude.		True Longitude.	Latitude.
1.0	53 43 21.5	-3 14 45.9	1.0	92 23 32.0	-5 05 31.0	1.0	146 01 55.4	-3 49 10.8
1.5	60 40 43.0	3 43 38.5	1.5	99 37 12.1	5 12 09.0	1.5	153 03 57.3	3 22 30.3
2.0	67 40 15.2	4 09 20.2	2.0	106 49 49.4	5 13 50.2	2.0	160 00 59.8	2 53 07.4
2.5	74 41 41.8	4 31 24.3	2.5	114 00 53.1	5 10 35.7	2.5	166 53 05.3	2 21 33.9
3.0	81 44 46.0	4 49 27.6	3.0	121 09 57.0	5 02 32.5	3.0	173 40 22.1	1 48 21.7
3.5	88 49 11.1	-5 03 11.0	3.5	128 16 40.2	-4 49 52.6	3.5	180 23 02.6	-1 14 01.9
4.0	95 54 39.7	5 12 19.7	4.0	135 20 45.9	4 32 52.7	4.0	187 01 21.4	0 39 04.4
4.5	103 00 54.6	5 16 43.3	4.5	142 22 02.0	4 11 53.2	4.5	193 35 35.2	-0 03 58.2
5.0	110 07 38.0	5 16 16.6	5.0	149 20 20.3	3 47 18.2	5.0	200 06 01.3	+0 30 49.2
5.5	117 14 31.8	5 10 59.4	5.5	156 15 35.4	3 19 33.9	5.5	206 32 56.4	1 04 51.9
6.0	124 21 17.0	-5 00 56.4	6.0	163 07 44.4	-2 49 08.8	6.0	212 56 36.5	+1 37 45.9
6.5	131 27 33.3	4 46 17.5	6.5	169 56 46.5	2 16 32.9	6.5	219 17 16.4	2 09 09.0
7.0	138 33 00.1	4 27 17.8	7.0	176 42 41.5	1 42 17.1	7.0	225 35 09.3	2 38 40.7
7.5	145 37 16.2	4 04 16.8	7.5	183 25 30.0	1 06 52.7	7.5	231 50 26.6	3 06 02.3
8.0	152 39 59.1	3 37 38.3	8.0	190 05 12.7	-0 30 50.8	8.0	238 03 18.4	3 30 57.8
8.5	159 40 46.8	-3 07 50.0	8.5	196 41 50.3	+0 05 18.1	8.5	244 13 53.4	+3 53 12.6
9.0	166 39 17.0	2 35 22.9	9.0	203 15 23.4	0 41 04.2	9.0	250 22 19.3	4 12 34.7
9.5	173 35 07.7	2 00 49.9	9.5	209 45 52.0	1 15 59.1	9.5	256 28 43.3	4 28 54.6
10.0	180 27 58.2	1 24 45.7	10.0	216 13 16.0	1 49 36.7	10.0	262 33 12.3	4 42 04.4
10.5	187 17 29.5	0 47 45.7	10.5	222 37 36.0	2 21 32.7	10.5	268 35 53.5	4 51 58.5
11.0	194 03 24.3	-0 10 24.8	11.0	228 58 52.7	+2 51 25.2	11.0	274 36 55.3	+4 58 33.8
11.5	200 45 28.2	+0 26 43.5	11.5	235 17 07.3	3 18 55.3	11.5	280 36 27.1	5 01 49.0
12.0	207 23 29.8	1 03 07.2	12.0	241 32 22.8	3 43 46.4	12.0	286 34 40.1	5 01 44.2
12.5	213 57 21.4	1 38 17.0	12.5	247 44 43.8	4 05 45.0	12.5	292 31 47.6	4 58 21.8
13.0	220 26 59.0	2 11 46.5	13.0	253 54 16.4	4 24 40.2	13.0	298 28 05.2	4 51 45.5
13.5	226 52 22.4	+2 43 12.8	13.5	260 01 09.4	+4 40 23.6	13.5	304 23 51.2	+4 42 00.0
14.0	233 13 35.6	3 12 16.0	14.0	266 05 34.0	4 52 49.3	14.0	310 19 26.8	4 29 11.8
14.5	239 30 46.8	3 38 39.6	14.5	272 07 44.1	5 01 53.7	14.5	316 15 15.8	4 13 28.1
15.0	245 44 08.0	4 02 10.4	15.0	278 07 56.5	5 07 34.7	15.0	322 11 45.0	3 54 57.1
15.5	251 53 55.0	4 22 37.9	15.5	284 06 31.0	5 09 52.5	15.5	328 09 24.0	3 33 47.9
16.0	258 00 27.2	+4 39 54.2	16.0	290 03 50.2	+5 08 48.3	16.0	334 08 44.6	+3 10 10.7
16.5	264 04 07.4	4 53 53.6	16.5	296 00 19.3	5 04 24.5	16.5	340 10 21.1	2 44 16.7
17.0	270 05 21.3	5 04 32.4	17.0	301 56 26.4	4 56 44.7	17.0	346 14 49.7	2 16 18.1
17.5	276 04 37.1	5 11 48.1	17.5	307 52 41.9	4 45 53.4	17.5	352 22 47.7	1 46 28.8
18.0	282 02 25.2	5 15 39.9	18.0	313 49 38.4	4 31 55.9	18.0	358 34 52.8	1 15 03.9
18.5	287 59 17.7	+5 16 07.9	18.5	319 47 50.2	+4 14 58.1	18.5	4 51 43.0	+0 42 20.8
19.0	293 55 48.1	5 13 12.9	19.0	325 47 53.0	3 55 07.3	19.0	11 13 55.0	+0 08 38.7
19.5	299 52 31.4	5 06 56.6	19.5	331 50 23.5	3 32 31.6	19.5	17 42 02.8	-0 25 40.3
20.0	305 50 02.3	4 57 21.5	20.0	337 55 58.4	3 07 20.3	20.0	24 16 37.2	1 00 11.8
20.5	311 48 55.9	4 44 31.0	20.5	344 05 14.4	2 39 44.2	20.5	30 58 03.2	1 34 27.9
21.0	317 49 47.3	+4 28 29.3	21.0	350 18 47.4	+2 09 56.1	21.0	37 46 39.1	-2 07 58.1
21.5	323 53 10.3	4 09 21.9	21.5	356 37 11.1	1 38 11.0	21.5	44 42 34.9	2 40 09.4
22.0	329 59 37.1	3 47 15.7	22.0	3 00 56.3	1 04 46.6	22.0	51 45 49.2	3 10 26.2
22.5	336 09 38.2	3 22 19.2	22.5	9 30 29.8	+0 30 03.1	22.5	58 56 09.1	3 38 11.7
23.0	342 23 41.3	2 54 43.1	23.0	16 06 13.4	-0 05 35.5	23.0	66 13 08.7	4 02 49.1
23.5	348 42 10.9	+2 24 40.7	23.5	22 48 22.5	-0 41 41.9	23.5	73 36 08.6	-4 23 42.8
24.0	355 05 27.5	1 52 28.1	24.0	29 37 04.6	1 17 45.5	24.0	81 04 16.3	4 40 20.6
24.5	1 33 46.9	1 18 24.6	24.5	36 32 18.3	1 53 12.7	24.5	88 36 27.4	4 52 15.1
25.0	8 07 19.6	0 42 52.7	25.0	43 33 52.7	2 27 27.1	25.0	96 11 27.5	4 59 05.7
25.5	14 46 10.5	+0 06 18.4	25.5	50 41 26.4	2 59 50.5	25.5	103 47 56.5	5 00 40.0
26.0	21 30 18.0	-0 30 48.9	26.0	57 54 27.5	-3 29 44.4	26.0	111 24 31.3	-4 56 54.5
26.5	28 19 34.0	1 07 56.6	26.5	65 12 13.4	3 56 30.9	26.5	118 59 49.6	4 47 55.0
27.0	35 13 43.8	1 44 29.7	27.0	72 33 53.2	4 19 35.0	27.0	126 32 34.6	4 33 56.1
27.5	42 12 26.1	2 19 51.7	27.5	79 58 27.9	4 38 25.9	27.5	134 01 37.6	4 15 20.2
28.0	49 15 13.7	2 53 25.2	28.0	87 24 53.7	4 52 38.3	28.0	141 26 00.8	3 52 35.7
28.5	56 21 34.0	-3 24 33.3	28.5	94 52 04.2	-5 01 53.7	28.5	148 44 58.5	-3 26 15.9
29.0	63 30 50.1	3 52 40.9	29.0	102 18 53.5	5 06 01.8	29.0	155 57 58.2	2 56 56.6
29.5	70 42 21.7	4 17 15.9	29.5	109 44 18.6	5 04 59.9	29.5	163 04 40.0	2 25 14.9
30.0	77 55 26.7	4 37 50.3	30.0	117 07 22.5	4 58 53.3	30.0	170 04 55.6	1 51 47.7
30.5	85 09 24.2	4 54 01.1	30.5	124 27 15.8	4 47 54.2	30.5	176 58 46.5	1 17 10.9
31.0	92 23 32.0	-5 05 31.0	31.0	131 43 18.0	-4 32 21.2	31.0	183 46 23.0	-0 41 58.1
31.5	99 37 12.1	-5 12 09.0	31.5	138 54 58.3	-4 12 37.7	31.5	190 28 01.9	-0 06 40.7

FOR GREENWICH MEAN NOON AND MIDNIGHT.

Day of Month.	JULY.		Day of Month.	AUGUST.		Day of Month.	SEPTEMBER.	
	True Longitude.	Latitude.		True Longitude.	Latitude.		True Longitude.	Latitude.
1.0	183 46 23.0	-0 41 58.1	1.0	232 03 58.1	+3 29 00.4	1.0	277 21 23.6	+5 12 47.1
1.5	190 28 01.9	-0 06 40.7	1.5	238 16 24.9	3 51 50.5	1.5	283 18 38.8	5 11 00.6
2.0	197 04 04.7	+0 28 12.7	2.0	244 25 21.9	4 11 45.2	2.0	289 15 00.8	5 05 53.7
2.5	203 34 56.2	1 02 16.0	2.5	250 31 19.2	4 28 36.7	2.5	295 10 55.3	4 57 30.1
3.0	210 01 03.2	1 35 05.6	3.0	256 34 45.2	4 42 19.1	3.0	301 06 45.9	4 45 54.9
3.5	216 22 52.8	+2 06 20.4	3.5	262 36 06.4	+4 52 47.8	3.5	307 02 54.4	+4 31 14.0
4.0	222 40 52.1	2 35 41.9	4.0	268 35 46.8	4 59 59.4	4.0	312 59 40.5	4 13 35.1
4.5	228 55 27.0	3 02 52.9	4.5	274 34 08.7	5 03 52.2	4.5	318 57 21.8	3 53 07.2
5.0	235 07 01.5	3 27 39.2	5.0	280 31 31.4	5 04 25.6	5.0	324 56 14.2	3 30 00.8
5.5	241 15 58.2	3 49 47.7	5.5	286 28 12.5	5 01 40.5	5.5	330 56 32.2	3 04 28.5
6.0	247 22 37.0	+4 09 07.5	6.0	292 24 28.0	+4 55 39.4	6.0	336 58 28.7	+2 36 44.1
6.5	253 27 15.6	4 25 29.1	6.5	298 20 31.8	4 46 26.0	6.5	343 02 16.0	2 07 03.4
7.0	259 30 09.8	4 38 45.1	7.0	304 16 36.9	4 34 05.9	7.0	349 08 05.5	1 35 44.0
7.5	265 31 33.4	4 48 49.8	7.5	310 12 55.4	4 18 45.9	7.5	355 16 07.8	1 03 05.2
8.0	271 31 38.1	4 55 39.1	8.0	316 09 39.1	4 00 34.7	8.0	1 26 33.8	+0 29 27.7
8.5	277 30 35.0	+4 59 10.7	8.5	322 06 59.7	+3 39 42.4	8.5	7 39 34.4	-0 04 46.4
9.0	283 28 34.2	4 59 24.3	9.0	328 05 09.3	3 16 20.6	9.0	13 55 20.5	0 39 13.7
9.5	289 25 45.3	4 56 21.2	9.5	334 04 20.9	2 50 42.5	9.5	20 14 04.0	1 13 29.2
10.0	295 22 18.5	4 50 04.3	10.0	340 04 48.8	2 23 02.8	10.0	26 35 56.7	1 47 08.3
10.5	301 18 24.1	4 40 38.2	10.5	346 06 48.6	1 53 37.2	10.5	33 01 11.4	2 19 44.8
11.0	307 14 14.0	+4 28 08.9	11.0	352 10 38.0	+1 22 43.1	11.0	39 30 01.0	-2 50 52.3
11.5	313 10 01.6	4 12 44.1	11.5	358 16 36.2	0 50 38.8	11.5	46 02 38.6	3 20 04.5
12.0	319 06 02.0	3 54 32.7	12.0	4 25 04.6	+0 17 43.6	12.0	52 39 16.7	3 46 55.3
12.5	325 02 32.9	3 33 45.0	12.5	10 36 26.3	-0 15 41.7	12.5	59 20 07.0	4 10 58.7
13.0	330 59 54.2	3 10 32.4	13.0	16 51 06.7	0 49 15.3	13.0	66 05 19.8	4 31 49.8
13.5	336 58 28.5	+2 45 07.4	13.5	23 09 31.6	-1 22 34.2	13.5	72 55 02.8	-4 49 04.9
14.0	342 58 41.2	2 17 43.3	14.0	29 32 08.3	1 55 14.7	14.0	79 49 20.5	5 02 22.0
14.5	349 01 00.1	1 48 34.8	14.5	35 59 23.9	2 26 51.8	14.5	86 48 13.2	5 11 21.3
15.0	355 05 55.4	1 17 57.8	15.0	42 31 44.6	2 56 59.2	15.0	93 51 36.1	5 15 46.2
15.5	1 13 59.8	0 46 09.2	15.5	49 09 35.1	3 25 10.0	15.5	100 59 18.6	5 15 23.8
16.0	7 25 47.4	+0 13 27.4	16.0	55 53 16.8	-3 50 56.3	16.0	108 11 03.1	-5 10 05.7
16.5	13 41 53.1	-0 19 47.9	16.5	62 43 06.6	4 13 49.6	16.5	115 26 25.9	4 59 49.2
17.0	20 02 52.4	0 53 14.9	17.0	69 39 15.1	4 33 22.1	17.0	122 44 54.5	4 44 37.6
17.5	26 29 19.6	1 26 30.2	17.5	76 41 45.6	4 49 06.2	17.5	130 05 50.9	4 24 40.9
18.0	33 01 47.2	1 59 08.2	18.0	83 50 31.9	5 00 36.4	18.0	137 28 30.3	4 00 16.2
18.5	39 40 44.7	-2 30 41.4	18.5	91 05 17.8	-5 07 30.0	18.5	144 52 02.9	-3 31 47.4
19.0	46 26 35.8	3 00 40.2	19.0	98 25 35.4	5 09 28.4	19.0	152 15 35.0	2 59 45.4
19.5	53 19 37.6	3 28 33.2	19.5	105 50 45.5	5 06 18.9	19.5	159 38 11.4	2 24 46.3
20.0	60 19 58.7	3 53 47.7	20.0	113 19 57.3	4 57 55.0	20.0	166 58 57.0	1 47 30.4
20.5	67 27 36.6	4 15 50.7	20.5	120 52 10.1	4 44 19.0	20.5	174 16 59.0	1 08 41.3
21.0	74 42 16.8	-4 34 09.7	21.0	128 26 15.3	-4 25 41.4	21.0	181 31 28.0	-0 29 03.0
21.5	82 03 31.1	4 48 14.3	21.5	136 00 58.8	4 02 21.4	21.5	188 41 40.4	+0 10 40.4
22.0	89 30 37.3	4 57 37.9	22.0	143 35 04.5	3 34 46.6	22.0	195 46 59.6	0 49 47.5
22.5	97 02 39.8	5 01 59.3	22.5	151 07 17.0	3 03 31.7	22.5	202 46 56.5	1 27 40.1
23.0	104 38 30.7	5 01 04.4	23.0	158 36 25.3	2 29 17.0	23.0	209 41 09.9	2 03 44.5
23.5	112 16 52.0	-4 54 47.5	23.5	166 01 25.9	-1 52 46.5	23.5	216 29 27.3	+2 37 31.6
24.0	119 56 19.5	4 43 12.5	24.0	173 21 23.9	1 14 45.5	24.0	223 11 43.6	3 08 37.7
24.5	127 35 26.3	4 26 32.4	24.5	180 35 36.0	-0 35 59.0	24.5	229 48 01.9	3 36 43.8
25.0	135 12 47.1	4 05 09.5	25.0	187 43 29.5	+0 02 50.0	25.0	236 18 31.5	4 01 35.7
25.5	142 47 02.0	3 39 34.0	25.5	194 44 43.9	0 41 02.3	25.5	242 43 28.0	4 23 03.2
26.0	150 17 00.0	-3 10 22.2	26.0	201 39 09.2	+1 18 02.8	26.0	249 03 12.1	+4 40 59.5
26.5	157 41 41.8	2 38 14.2	26.5	208 26 45.4	1 53 21.1	26.5	255 18 08.9	4 55 20.9
27.0	165 00 20.5	2 03 52.6	27.0	215 07 41.3	2 26 31.6	27.0	261 28 46.7	5 06 06.0
27.5	172 12 23.1	1 27 59.7	27.5	221 42 12.9	2 57 13.7	27.5	267 35 36.6	5 13 15.5
28.0	179 17 30.3	0 51 16.4	28.0	228 10 42.2	3 25 10.6	28.0	273 39 11.1	5 16 51.2
28.5	186 15 34.2	-0 14 21.0	28.5	234 33 35.6	+3 50 09.2	28.5	279 40 04.2	+5 16 56.5
29.0	193 06 37.8	+0 22 11.8	29.0	240 51 22.8	4 11 59.7	29.0	285 38 50.5	5 13 35.2
29.5	199 50 53.3	0 57 50.8	29.5	247 04 35.5	4 30 35.1	29.5	291 36 04.6	5 06 52.3
30.0	206 28 39.9	1 32 09.2	30.0	253 13 46.8	4 45 50.3	30.0	297 32 20.4	4 56 53.5
30.5	213 00 22.3	2 04 43.6	30.5	259 19 30.6	4 57 42.2	30.5	303 28 11.2	4 43 45.1
31.0	219 26 28.7	+2 35 14.3	31.0	265 22 19.9	+5 06 09.1	31.0	309 24 09.1	+4 27 34.3
31.5	225 47 30.0	+3 03 24.6	31.5	271 22 47.3	+5 11 10.5	31.5	315 20 44.5	+4 08 29.2

FOR GREENWICH MEAN NOON AND MIDNIGHT.

Day of Month.	OCTOBER.		Day of Month.	NOVEMBER.		Day of Month.	DECEMBER.	
	True Longitude.	Latitude.		True Longitude.	Latitude.		True Longitude.	Latitude.
1.0	309 24 09.1	+ 4 27 34.3	1.0	353 28 23.8	+ 1 11 04.6	1.0	26 35 20.4	- 1 53 04.8
1.5	315 20 44.5	4 08 29.2	1.5	359 40 59.1	0 37 34.8	1.5	33 11 10.9	2 24 51.4
2.0	321 18 25.8	3 46 39.1	2.0	5 57 51.9	+ 0 03 16.3	2.0	39 53 24.7	2 55 06.2
2.5	327 17 39.5	3 22 14.4	2.5	12 19 19.3	- 0 31 27.6	2.5	46 42 00.0	3 23 18.0
3.0	333 18 49.8	2 55 27.8	3.0	18 45 33.4	1 06 11.3	3.0	53 36 47.0	3 48 54.7
3.5	339 22 18.6	+ 2 26 32.5	3.5	25 16 41.3	- 1 40 27.4	3.5	60 37 26.0	- 4 11 24.6
4.0	345 28 24.3	1 55 44.4	4.0	31 52 43.5	2 13 46.3	4.0	67 43 26.9	4 30 17.6
4.5	351 37 23.7	1 23 21.2	4.5	38 33 35.0	2 45 37.4	4.5	74 54 10.3	4 45 06.9
5.0	357 49 30.0	0 49 42.8	5.0	45 19 04.8	3 15 29.5	5.0	82 08 48.8	4 55 29.1
5.5	4 04 54.1	+ 0 15 10.9	5.5	52 08 56.0	3 42 51.4	5.5	89 26 28.4	5 01 07.1
6.0	10 23 43.8	- 0 19 50.7	6.0	59 02 46.4	- 4 07 13.1	6.0	96 46 11.5	- 5 01 50.0
6.5	16 46 04.5	0 54 56.6	6.5	66 00 09.6	4 28 06.9	6.5	104 06 58.3	4 57 34.1
7.0	23 11 59.0	1 29 39.3	7.0	73 00 35.6	4 45 08.1	7.0	111 27 50.6	4 48 22.8
7.5	29 41 27.7	2 03 31.3	7.5	80 03 31.8	4 57 55.7	7.5	118 47 53.5	4 34 27.0
8.0	36 14 29.0	2 36 03.6	8.0	87 08 24.7	5 06 13.7	8.0	126 06 17.8	4 16 03.9
8.5	42 50 59.5	- 3 06 47.3	8.5	94 14 40.9	- 5 09 51.1	8.5	133 22 21.5	- 3 53 36.6
9.0	49 30 54.3	3 35 13.9	9.0	101 21 48.2	5 08 42.3	9.0	140 35 30.9	3 27 32.5
9.5	56 14 06.9	4 00 56.5	9.5	108 29 16.8	5 02 47.6	9.5	147 45 20.6	2 58 22.3
10.0	63 00 30.0	4 23 28.8	10.0	115 36 40.0	4 52 12.4	10.0	154 51 33.7	2 26 39.0
10.5	69 49 55.7	4 42 27.3	10.5	122 43 34.8	4 37 07.6	10.5	161 54 00.5	1 52 56.9
11.0	76 42 15.0	- 4 57 31.0	11.0	129 49 41.8	- 4 17 48.6	11.0	168 52 37.8	- 1 17 50.6
11.5	83 37 18.5	5 08 22.1	11.5	136 54 44.8	3 54 35.3	11.5	175 47 27.8	0 41 54.0
12.0	90 34 56.2	5 14 46.1	12.0	143 58 31.5	3 27 51.5	12.0	182 38 36.7	- 0 05 40.3
12.5	97 34 57.3	5 16 32.9	12.5	151 00 52.1	2 58 03.7	12.5	189 26 12.8	+ 0 30 18.6
13.0	104 37 09.8	5 13 36.3	13.0	158 01 39.1	2 25 41.4	13.0	196 10 26.4	1 05 32.6
13.5	111 41 21.1	- 5 05 54.8	13.5	165 00 45.9	- 1 51 16.3	13.5	202 51 27.5	+ 1 39 33.9
14.0	118 47 17.0	4 53 31.9	14.0	171 58 06.6	1 15 21.3	14.0	209 29 26.0	2 11 56.2
14.5	125 54 41.3	4 36 35.9	14.5	178 53 35.4	0 38 30.4	14.5	216 04 30.2	2 42 15.7
15.0	133 03 16.3	4 15 20.1	15.0	185 47 05.5	- 0 01 17.8	15.0	222 36 46.8	3 10 11.2
15.5	140 12 41.7	3 50 03.2	15.5	192 38 29.3	+ 0 35 42.6	15.5	229 06 20.7	3 35 24.1
16.0	147 22 35.0	- 3 21 08.6	16.0	199 27 37.6	+ 1 11 57.5	16.0	235 33 14.7	+ 3 57 38.4
16.5	154 32 31.5	2 49 04.5	16.5	206 14 19.8	1 46 55.4	16.5	241 57 29.9	4 16 41.0
17.0	161 42 04.1	2 14 23.2	17.0	212 58 24.4	2 20 07.1	17.0	248 19 06.0	4 32 21.5
17.5	168 50 43.7	1 37 40.1	17.5	219 39 39.1	2 51 05.8	17.5	254 38 02.1	4 44 32.8
18.0	175 57 59.7	0 59 33.3	18.0	226 17 51.2	3 19 27.9	18.0	260 54 17.0	4 53 10.3
18.5	183 03 20.8	- 0 20 42.2	18.5	232 52 48.8	+ 3 44 53.5	18.5	267 07 49.9	+ 4 58 12.7
19.0	190 06 16.0	+ 0 18 13.6	19.0	239 24 20.5	4 07 06.4	19.0	273 18 40.6	4 59 41.0
19.5	197 06 14.7	0 56 35.3	19.5	245 52 17.5	4 25 53.9	19.5	279 26 51.3	4 57 38.7
20.0	204 02 48.3	1 33 46.1	20.0	252 16 33.1	4 41 07.6	20.0	285 32 26.3	4 52 11.8
20.5	210 55 30.9	2 09 12.6	20.5	258 37 04.2	4 52 42.1	20.5	291 35 32.3	4 43 27.8
21.0	217 44 00.2	+ 2 42 24.6	21.0	264 53 51.0	+ 5 00 35.7	21.0	297 36 19.2	+ 4 31 36.0
21.5	224 27 58.2	3 12 56.6	21.5	271 06 57.8	5 04 49.4	21.5	303 35 00.6	4 16 47.2
22.0	231 07 11.8	3 40 27.5	22.0	277 16 33.3	5 05 26.8	22.0	309 31 53.5	3 59 13.0
22.5	237 41 33.3	4 04 41.0	22.5	283 22 50.5	5 02 33.4	22.5	315 27 18.5	3 39 05.9
23.0	244 11 00.5	4 25 25.2	23.0	289 26 06.7	4 56 16.6	23.0	321 21 40.0	3 16 39.1
23.5	250 35 36.6	+ 4 42 32.3	23.5	295 26 43.3	+ 4 46 44.8	23.5	327 15 25.5	+ 2 52 06.1
24.0	256 55 30.4	4 55 57.5	24.0	301 25 05.3	4 34 07.7	24.0	333 09 06.2	2 25 41.1
24.5	263 10 55.7	5 05 40.1	24.5	307 21 41.7	4 18 35.6	24.5	339 03 16.2	1 57 38.2
25.0	269 22 11.0	5 11 41.2	25.0	313 17 04.3	4 00 19.1	25.0	344 58 32.0	1 28 12.1
25.5	275 29 39.2	5 14 04.2	25.5	319 11 48.1	3 39 29.4	25.5	350 55 32.7	0 57 38.7
26.0	281 33 46.9	+ 5 12 54.2	26.0	325 06 29.8	+ 3 16 18.2	26.0	356 54 59.0	+ 0 26 13.5
26.5	287 35 03.9	5 08 17.2	26.5	331 01 48.1	2 50 57.7	26.5	2 57 32.7	- 0 05 46.2
27.0	293 34 02.6	5 00 20.2	27.0	336 58 23.3	2 23 40.5	27.0	9 03 55.8	0 38 02.1
27.5	299 31 17.0	4 49 11.0	27.5	342 56 55.8	1 54 40.0	27.5	15 14 50.1	1 10 14.5
28.0	305 27 23.1	4 34 58.0	28.0	348 58 06.4	1 24 10.8	28.0	21 30 56.0	1 42 02.6
28.5	311 22 58.3	+ 4 17 49.7	28.5	355 02 35.3	+ 0 52 28.5	28.5	27 52 50.9	- 2 13 03.1
29.0	317 18 39.2	3 57 55.6	29.0	1 11 00.9	+ 0 19 50.4	29.0	34 21 08.6	2 42 50.9
29.5	323 15 03.2	3 35 25.9	29.5	7 23 59.5	- 0 13 24.2	29.5	40 56 17.2	3 10 58.9
30.0	329 12 47.1	3 10 31.5	30.0	13 42 04.1	0 46 54.4	30.0	47 38 37.5	3 36 58.6
30.5	335 12 26.3	2 43 24.0	30.5	20 05 43.5	1 20 16.5	30.5	54 28 21.9	4 00 20.4
31.0	341 14 34.8	+ 2 14 16.8	31.0	26 35 20.4	- 1 53 04.8	31.0	61 25 31.9	- 4 20 33.7
31.5	347 19 44.3	+ 1 43 24.8	31.5	33 11 10.9	- 2 24 51.4	31.5	68 29 57.2	- 4 37 08.7

QUANTITIES REQUIRED IN COMPUTING THE
MOON'S LIBRATION.ARGUMENT, $(\Omega - \lambda)$, or $(\Omega - \lambda - 180^\circ)$.SUN'S ABERRATION AND HORI-
ZONTAL PARALLAX.

FOR GREENWICH MEAN NOON.

$\Omega - \lambda$	μ	$\frac{1}{A}$	B	$\Omega - \lambda$	Date.	Aberration. (Struve.)	Hor. Par.
"	"	"	"	"	1903.	"	"
0	0.0	39	0 00.0	180	Jan. 0	- 20.79	8.95
2	0.0	39	0 03.1	178	10	20.78	8.95
4	0.1	39	0 06.2	176	20	20.77	8.94
6	0.2	39	0 09.3	174	30	20.75	8.93
8	0.2	39	0 12.4	172	Feb. 9	20.71	8.92
10	0.2	39	0 15.4	170	19	- 20.67	8.90
12	0.3	40	0 18.5	168	March 1	20.62	8.88
14	0.3	40	0 21.5	166	11	20.57	8.86
16	0.3	40	0 24.5	164	21	20.51	8.83
18	0.3	41	0 27.4	162	31	20.45	8.81
20	0.4	41	0 30.4	160	April 10	- 20.39	8.78
22	0.4	42	0 33.2	158	20	20.34	8.76
24	0.4	42	0 36.1	156	30	20.29	8.73
26	0.5	43	0 38.9	154	May 10	20.24	8.71
28	0.5	44	0 41.7	152	20	20.19	8.69
30	0.5	45	0 44.4	150	30	- 20.16	8.68
32	0.5	46	0 47.0	148	June 9	20.13	8.67
34	0.5	47	0 49.7	146	19	20.11	8.66
36	0.5	48	0 52.2	144	29	20.10	8.65
38	0.6	49	0 54.7	142	July 9	20.10	8.66
40	0.6	50	0 57.1	140	19	- 20.11	8.66
42	0.6	52	0 59.4	138	29	20.13	8.67
44	0.6	54	1 01.7	136	Aug. 8	20.16	8.68
46	0.6	56	1 03.9	134	18	20.20	8.69
48	0.6	58	1 06.0	132	28	20.24	8.71
50	0.6	60	1 08.0	130	Sept. 7	- 20.29	8.73
52	0.6	63	1 10.0	128	17	20.34	8.76
54	0.5	66	1 11.8	126	27	20.40	8.78
56	0.5	69	1 13.6	124	Oct. 7	20.46	8.81
58	0.5	73	1 15.3	122	17	20.52	8.83
60	0.5	77	1 16.9	120	27	- 20.58	8.86
62	0.5	83	1 18.4	118	Nov. 6	20.63	8.88
64	0.5	89	1 19.8	116	16	20.68	8.90
66	0.4	95	1 21.1	114	26	20.72	8.92
68	0.4	103	1 22.3	112	Dec. 6	20.75	8.93
70	0.4	113	1 23.4	110	16	- 20.77	8.94
72	0.4	125	1 24.4	108	26	20.79	8.95
74	0.3	141	1 25.3	106	36	- 20.79	8.95
76	0.3	160	1 26.1	104			
78	0.2	186	1 26.8	102			
80	0.2	222	1 27.4	100			
82	0.2	278	1 27.9	98			
84	0.1	370	1 28.3	96			
86	0.1	554	1 28.6	94			
88	0.0	1110	1 28.7	92			
90	0.0	∞	1 28.8	90			

Sun's Mean Equatorial Horizontal
Parallax.8.80''; $\log = 0.94448$. μ has the sign of $\tan (\lambda - \Omega)$ A has the sign of $\cos (\Omega - \lambda)$ B has the sign of $\sin (\Omega - \lambda)$

See formulæ, page 441.

FOR GREENWICH MEAN NOON.

Date.	Precession in Longitude from 1903.0.	Nutation.			Obliquity of Ecliptic. (Peters.)	Date.	Precession in Longitude from 1903.0.	Nutation.			Obliquity of Ecliptic. (Peters.)
		In Longi- tude.	In R. A.	In Obliq- uity.				In Longi- tude.	In R. A.	In Obliq- uity.	
					25° 26'						25° 26'
Jan. 0	- 0.14	+ 6.77	+ 0.414	- 9.20	57.17	July 4	+ 25.32	+ 3.97	+ 0.243	- 9.62	56.50
5	+ 0.54	6.91	0.423	9.18	57.18	9	26.00	4.06	0.249	9.59	56.53
10	1.23	7.04	0.431	9.14	57.21	14	26.69	4.14	0.253	9.54	56.57
15	1.92	7.14	0.437	9.09	57.25	19	27.38	4.20	0.257	9.49	56.62
20	2.61	7.21	0.441	9.02	57.31	24	28.07	4.23	0.258	9.42	56.68
25	+ 3.30	+ 7.25	+ 0.443	- 8.95	57.38	29	+ 28.76	+ 4.22	+ 0.258	- 9.34	56.75
30	3.99	7.24	0.443	8.87	57.45	Aug. 3	29.44	4.18	0.256	9.26	56.82
Feb. 4	4.67	7.20	0.440	8.79	57.53	8	30.13	4.11	0.251	9.18	56.90
9	5.36	7.12	0.435	8.70	57.61	13	30.82	4.00	0.245	9.10	56.98
14	6.05	7.00	0.428	8.62	57.68	18	31.51	3.86	0.236	9.02	57.05
19	+ 6.74	+ 6.84	+ 0.418	- 8.55	57.75	23	+ 32.20	+ 3.69	+ 0.226	- 8.94	57.12
24	7.43	6.64	0.406	8.48	57.81	28	32.89	3.48	0.213	8.87	57.19
Mar. 1	8.11	6.41	0.392	8.43	57.86	Sept. 2	33.57	3.25	0.199	8.81	57.24
6	8.80	6.16	0.377	8.38	57.90	7	34.26	3.00	0.183	8.76	57.29
11	9.49	5.89	0.360	8.35	57.92	12	34.95	2.72	0.166	8.72	57.32
16	+ 10.18	+ 5.60	+ 0.343	- 8.34	57.92	17	+ 35.64	+ 2.43	+ 0.149	- 8.70	57.34
21	10.87	5.31	0.325	8.35	57.91	22	36.33	2.13	0.130	8.69	57.34
26	11.55	5.01	0.307	8.37	57.89	27	37.01	1.83	0.112	8.70	57.32
31	12.24	4.72	0.289	8.40	57.85	Oct. 2	37.70	1.54	0.094	8.72	57.29
Apr. 5	12.93	4.44	0.272	8.45	57.79	7	38.39	1.26	0.077	8.76	57.24
10	+ 13.62	+ 4.18	+ 0.256	- 8.51	57.72	12	+ 39.08	+ 0.99	+ 0.061	- 8.82	57.18
15	14.31	3.95	0.241	8.50	57.64	17	39.77	0.75	0.046	8.88	57.11
20	14.99	3.74	0.228	8.68	57.54	22	40.45	0.53	0.032	8.96	57.03
25	15.68	3.56	0.217	8.77	57.44	27	41.14	0.34	0.021	9.05	56.93
30	16.37	3.41	0.208	8.87	57.34	Nov. 1	41.83	0.19	0.012	9.15	56.83
May 5	+ 17.06	+ 3.30	+ 0.202	- 8.98	57.23	6	+ 42.52	+ 0.08	+ 0.005	- 9.25	56.72
10	17.75	3.22	0.197	9.08	57.12	11	43.21	+ 0.01	+ 0.001	9.35	56.61
15	18.44	3.18	0.194	9.18	57.01	16	43.89	- 0.02	- 0.001	9.45	56.51
20	19.12	3.17	0.193	9.28	56.91	21	44.58	- 0.01	0.000	9.54	56.41
25	19.81	3.19	0.195	9.37	56.81	26	45.27	+ 0.04	+ 0.002	9.63	56.32
30	+ 20.50	+ 3.24	+ 0.198	- 9.44	56.73	Dec. 1	+ 45.96	+ 0.12	+ 0.007	- 9.70	56.23
June 4	21.19	3.31	0.202	9.51	56.65	6	46.65	0.22	0.013	9.77	56.16
9	21.88	3.40	0.208	9.57	56.59	11	47.34	0.35	0.021	9.82	56.11
14	22.56	3.51	0.215	9.61	56.54	16	48.02	0.49	0.030	9.85	56.08
19	23.25	3.63	0.222	9.64	56.51	21	48.71	0.65	0.040	9.86	56.05
24	+ 23.94	+ 3.75	+ 0.229	- 9.65	56.49	26	+ 49.40	+ 0.81	+ 0.049	- 9.86	56.04
29	24.63	3.86	0.236	9.64	56.49	31	50.09	0.96	0.058	9.84	56.05
July 4	+ 25.32	+ 3.97	+ 0.243	- 9.62	56.50	36	+ 50.78	+ 1.10	+ 0.067	- 9.80	56.09

Mean Obliquity, 1903.0.

Precession for 1903 (Struve). 50.2645 log = 1.70126
 Precession in a Solar day . . 0.1376 log = 9.13867
 Precession in a Sidereal day . 0.1372 log = 9.13748

Peters 23 27 06.36
 Hansen 23 27 06.62
 Le Verrier 23 27 06.62
 Newcomb 23 27 06.86

TERMS OF SHORT PERIOD IN THE NUTATION, 1903. 287

FOR GREENWICH MEAN NOON.

Date.	$\delta''\psi$	$\delta''\omega$	Date.	$\delta''\psi$	$\delta''\omega$	Date.	$\delta''\psi$	$\delta''\omega$	Date.	$\delta''\psi$	$\delta''\omega$
Jan. 0	"	"	Feb. 15	"	"	Apr. 1	"	"	May 17	"	"
1	+ 0.10	- 0.03	16	- 0.01	+ 0.07	2	- 0.21	- 0.03	18	+ 0.13	- 0.03
2	0.12	- 0.01	17	0.07	0.05	3	0.15	0.06	19	0.13	0.00
3	0.11	+ 0.02	18	0.10	+ 0.02	4	- 0.07	0.08	20	0.10	+ 0.03
4	+ 0.06	0.05	19	0.10	- 0.02	5	+ 0.04	0.08	21	+ 0.05	0.05
5	0.00	0.06	20	0.07	0.04	6	0.13	0.06	22	- 0.02	0.07
6	- 0.08	0.07	21	- 0.04	0.06	7	0.19	- 0.02	23	0.10	0.07
7	0.16	0.06	22	+ 0.02	0.07	8	0.20	+ 0.02	24	0.17	0.06
8	0.23	0.04	23	0.07	0.06	9	0.17	0.05	25	0.22	+ 0.03
9	0.25	+ 0.01	24	0.11	0.05	10	0.11	0.07	26	0.23	0.00
	0.23	- 0.03		0.13	- 0.03		+ 0.03	0.08		0.20	- 0.04
10	- 0.17	- 0.06	25	+ 0.14	0.00	11	- 0.05	+ 0.06	27	- 0.13	- 0.07
11	- 0.07	0.08	26	0.11	+ 0.03	12	0.12	+ 0.03	28	- 0.03	0.08
12	+ 0.04	0.07	27	+ 0.07	0.05	13	0.13	0.00	29	+ 0.08	0.07
13	0.14	0.05	28	0.00	0.07	14	0.11	- 0.03	30	0.18	0.04
14	0.21	- 0.02	Mar. 1	- 0.09	0.07	15	0.08	0.05	31	0.22	- 0.01
15	0.23	+ 0.02	2	0.16	0.06	16	- 0.02	0.06	June 1	0.23	+ 0.03
16	0.20	0.05	3	0.22	+ 0.03	17	+ 0.03	0.07	2	0.18	0.06
17	0.14	0.07	4	0.23	0.00	18	0.08	0.06	3	0.11	0.07
18	+ 0.06	0.08	5	0.21	- 0.04	19	0.12	0.04	4	+ 0.02	0.07
19	- 0.02	0.06	6	0.14	0.07	20	0.13	- 0.02	5	- 0.06	0.05
20	- 0.08	+ 0.03	7	- 0.05	- 0.08	21	+ 0.12	+ 0.01	6	- 0.10	+ 0.02
21	0.10	0.00	8	+ 0.06	0.07	22	0.09	0.04	7	0.12	- 0.01
22	0.10	- 0.03	9	0.14	0.05	23	+ 0.04	0.06	8	0.10	0.04
23	0.07	0.05	10	0.19	- 0.01	24	- 0.04	0.07	9	- 0.06	0.06
24	- 0.02	0.06	11	0.20	+ 0.03	25	0.11	0.07	10	0.00	0.07
25	+ 0.03	0.07	12	0.15	0.06	26	0.18	0.05	11	+ 0.06	0.06
26	0.07	0.06	13	0.08	0.08	27	0.22	+ 0.02	12	0.10	0.05
27	0.11	0.04	14	+ 0.01	0.07	28	0.22	- 0.01	13	0.12	0.03
28	0.13	- 0.02	15	- 0.06	0.05	29	0.17	0.05	14	0.13	- 0.01
29	0.12	+ 0.01	16	0.10	+ 0.02	30	- 0.09	0.07	15	0.11	+ 0.02
30	+ 0.10	+ 0.04	17	- 0.11	- 0.01	May 1	+ 0.02	- 0.08	16	+ 0.07	+ 0.04
31	+ 0.04	0.06	18	0.09	0.04	2	0.11	0.06	17	0.00	0.06
Feb. 1	- 0.04	0.07	19	- 0.05	0.06	3	0.19	- 0.03	18	- 0.08	0.07
2	0.13	0.07	20	0.00	0.07	4	0.22	0.00	19	0.16	0.06
3	0.20	0.05	21	+ 0.05	0.06	5	0.20	+ 0.04	20	0.22	0.04
4	0.24	+ 0.02	22	0.09	0.05	6	0.14	0.07	21	0.25	+ 0.01
5	0.25	- 0.02	23	0.12	0.03	7	+ 0.06	0.08	22	0.24	- 0.02
6	0.20	0.05	24	0.13	- 0.01	8	- 0.02	0.07	23	0.18	0.06
7	0.12	0.07	25	0.12	+ 0.02	9	0.09	0.05	24	- 0.08	0.07
8	- 0.01	0.08	26	0.09	0.04	10	0.12	+ 0.02	25	+ 0.03	0.07
9	+ 0.09	- 0.06	27	+ 0.02	+ 0.06	11	- 0.12	- 0.02	26	+ 0.13	- 0.06
10	0.17	- 0.03	28	- 0.05	0.07	12	0.09	0.05	27	0.20	- 0.03
11	0.21	0.00	29	0.13	0.06	13	- 0.04	0.06	28	0.23	+ 0.01
12	0.20	+ 0.04	30	0.19	0.04	14	+ 0.02	0.07	29	0.20	0.05
13	0.15	0.07	31	0.22	+ 0.01	15	0.07	0.06	30	0.14	0.07
14	+ 0.08	0.08	Apr. 1	0.21	- 0.03	16	0.11	0.05	July 1	+ 0.06	0.08
15	- 0.01	+ 0.07	2	- 0.15	- 0.06	17	+ 0.13	- 0.03	2	- 0.02	+ 0.06

FOR GREENWICH MEAN NOON.

Date.	$\delta''\psi$	$\delta''\omega$	Date.	$\delta''\psi$	$\delta''\omega$	Date.	$\delta''\psi$	$\delta''\omega$	Date.	$\delta''\psi$	$\delta''\omega$
July	"	"	Aug.	"	"	Oct.	"	"	Nov.	"	"
1	+0.06	+0.08	16	-0.23	-0.03	1	+0.16	-0.01	16	-0.08	+0.06
2	-0.02	0.06	17	0.17	0.06	2	0.15	+0.01	17	0.12	+0.03
3	0.08	+0.03	18	-0.08	0.08	3	0.11	0.04	18	0.13	-0.01
4	0.10	0.00	19	+0.03	0.07	4	+0.05	0.06	19	0.10	0.04
5	0.09	-0.03	20	0.12	0.05	5	-0.02	0.07	20	-0.05	0.06
6	0.06	0.05	21	0.18	-0.02	6	0.10	0.07	21	+0.03	0.07
7	-0.01	0.06	22	0.19	+0.02	7	0.17	0.05	22	0.08	0.06
8	+0.05	0.07	23	0.16	0.06	8	0.22	+0.02	23	0.13	0.05
9	0.09	0.06	24	0.09	0.08	9	0.23	-0.01	24	0.15	-0.03
10	0.13	0.04	25	+0.02	0.07	10	0.20	0.04	25	0.15	0.00
11	+0.14	-0.01	26	-0.05	+0.05	11	-0.13	-0.07	26	+0.13	+0.02
12	0.13	+0.02	27	0.09	+0.02	12	-0.03	0.08	27	0.08	0.05
13	0.09	0.04	28	0.10	-0.01	13	+0.07	0.07	28	+0.01	0.06
14	+0.03	0.06	29	0.07	0.04	14	0.14	-0.04	29	-0.06	0.07
15	-0.05	0.07	30	-0.02	0.06	15	0.18	0.00	30	0.14	0.06
16	0.13	0.07	31	+0.03	0.07	16	0.17	+0.04	Dec. 1	0.20	0.04
17	0.21	0.05	Sept. 1	0.09	0.06	17	0.12	0.07	2	0.23	+0.01
18	0.25	+0.02	2	0.13	0.05	18	+0.05	0.08	3	0.23	-0.02
19	0.26	-0.01	3	0.15	0.03	19	-0.04	0.07	4	0.18	0.05
20	0.22	0.04	4	0.16	-0.01	20	0.10	0.05	5	-0.09	0.07
21	-0.14	-0.07	5	+0.13	+0.02	21	-0.12	+0.02	6	+0.02	-0.07
22	-0.03	0.08	6	0.09	0.04	22	0.12	-0.02	7	0.11	0.06
23	+0.08	0.07	7	+0.03	0.06	23	0.08	0.05	8	0.18	-0.03
24	0.16	-0.04	8	-0.05	0.07	24	-0.02	0.06	9	0.21	+0.01
25	0.21	0.00	9	0.13	0.06	25	+0.05	0.07	10	0.19	0.05
26	0.20	+0.04	10	0.20	0.04	26	0.10	0.06	11	0.12	0.07
27	0.16	0.07	11	0.24	+0.01	27	0.14	0.04	12	+0.04	0.08
28	0.09	0.08	12	0.24	-0.02	28	0.16	-0.02	13	-0.04	0.06
29	+0.01	0.07	13	0.19	0.05	29	0.15	+0.01	14	0.10	0.04
30	-0.06	0.05	14	0.11	0.07	30	0.12	0.03	15	0.12	+0.01
31	-0.09	+0.02	15	-0.01	-0.08	31	+0.07	+0.05	16	-0.11	-0.03
Aug. 1	0.09	-0.02	16	+0.09	0.06	Nov. 1	-0.01	0.06	17	-0.06	0.06
2	0.06	0.05	17	0.15	-0.03	2	0.08	0.07	18	0.00	0.07
3	-0.01	0.06	18	0.18	+0.01	3	0.15	0.06	19	+0.06	0.07
4	+0.04	0.07	19	0.16	0.05	4	0.21	+0.04	20	0.12	0.06
5	0.10	0.06	20	0.10	0.07	5	0.23	0.00	21	0.15	0.04
6	0.13	0.04	21	+0.03	0.08	6	0.21	-0.03	22	0.15	-0.01
7	0.15	0.02	22	-0.05	0.06	7	0.14	0.06	23	0.14	+0.02
8	0.14	0.00	23	0.09	+0.04	8	-0.06	0.08	24	0.09	0.04
9	0.11	+0.03	24	0.11	0.00	9	+0.05	0.07	25	+0.03	0.06
10	+0.06	+0.05	25	-0.09	-0.03	10	+0.14	-0.05	26	-0.04	+0.07
11	-0.01	0.07	26	-0.05	0.05	11	0.19	-0.02	27	0.12	0.07
12	0.10	0.07	27	+0.01	0.07	12	0.19	+0.02	28	0.20	0.05
13	0.17	0.06	28	0.07	0.07	13	0.15	0.05	29	0.24	+0.02
14	0.23	+0.04	29	0.12	0.05	14	+0.08	0.07	30	0.25	-0.01
15	0.26	0.00	30	0.15	0.04	15	0.00	0.08	31	0.21	0.04
16	-0.23	-0.03	Oct. 1	+0.16	-0.01	16	-0.08	+0.06	32	-0.14	-0.07

PART II

ASTRONOMICAL EPHEMERIS

FOR THE

MERIDIAN OF WASHINGTON.

FORMULÆ FOR THE REDUCTION OF THE POSITIONS OF THE FIXED STARS, USING THE NOTATION OF BESSEL, AND THE CONSTANTS OF STRUVE AND PETERS.

NOTATION.

- τ , the time, reckoned in units of one year, from the beginning of the Besselian fictitious year, (1902, December 31.826^d = 1903, January 0.826^d, Washington mean time),
 a_0, δ_0 , the star's mean right ascension and declination at the beginning of the fictitious year,
 α, δ , the star's apparent right ascension and declination at the time τ ,
 μ, μ' , the annual proper motion in right ascension and declination,
 \odot , the Sun's true longitude,
 \oslash , the longitude of the Moon's ascending node,
 ω , the obliquity of the ecliptic,

- Γ , the longitude of the Sun's perigee,
 Γ' , the longitude of the Moon's perigee,
 ζ , the Moon's mean longitude.

BESSELIAN STAR-NUMBERS.

$$\begin{aligned} A &= \tau - 0.34253 \sin \oslash \\ &\quad + 0.00410 \sin 2 \oslash \\ &\quad - 0.02519 \sin 2 \odot \\ &\quad + 0.00293 \sin (\odot + 81^\circ 55') \\ &\quad - 0.00405 \sin 2 \zeta \\ &\quad + 0.00135 \sin (\zeta - \Gamma') \\ B &= -9.2240 \cos \oslash \\ &\quad + 0.0895 \cos 2 \oslash \\ &\quad - 0.5506 \cos 2 \odot \\ &\quad - 0.0092 \cos (\odot + 281^\circ 16') \\ &\quad - 0.0885 \cos 2 \zeta \\ C &= -20.4451 \cos \omega \cos \odot \\ D &= -20.4451 \sin \odot \\ E &= -0.0447 \sin \oslash + 0.0014'' \sin 2 \oslash - 0.0032'' \sin 2 \odot \end{aligned}$$

BESSEL'S Star-Constants.

$$\begin{aligned} a &= 3.07278'' + 1.33679'' \sin a_0 \tan \delta_0 = \text{precession in right ascension} \\ b &= \frac{1}{15} \cos a_0 \tan \delta_0 \\ c &= \frac{1}{15} \cos a_0 \sec \delta_0 \\ d &= \frac{1}{15} \sin a_0 \sec \delta_0 \\ a' &= 20.0518'' \cos a_0 = \text{precession in declination} \\ b' &= -\sin a_0 \\ c' &= \tan \omega \cos \delta_0 - \sin a_0 \sin \delta_0 \\ d' &= \cos a_0 \sin \delta_0 \end{aligned}$$

Reduction to Apparent Position.

$$\begin{aligned} \alpha &= a_0 + \tau \mu + Aa + Bb + Cc + Dd + \frac{1}{15} E & (\text{in time}) \\ \delta &= \delta_0 + \tau \mu' + Aa' + Bb' + Cc' + Dd' & (\text{in arc}) \end{aligned}$$

INDEPENDENT STAR-NUMBERS.

$$\begin{aligned} f &= 46.0917'' A + E \text{ (in arc)} = 3.07278'' A + \frac{1}{15} E & (\text{in time}) \\ f' &= 46.0917'' A' + E \text{ (in arc)} = 3.07278'' A' + \frac{1}{15} E & (\text{in time}) \\ g \sin G &= B & g' \sin G' &= B' & h \sin H &= C \\ g \cos G &= 20.0518'' A & g' \cos G' &= 20.0518'' A' & h \cos H &= D & i &= C \tan \omega \end{aligned}$$

Reduction to Apparent Position.

$$\begin{aligned} \alpha &= a_0 + f + \tau \mu + \frac{1}{15} g \sin (G + a_0) \tan \delta_0 + \frac{1}{15} h \sin (H + a_0) \sec \delta_0 & (\text{in time}) \\ \delta &= \delta_0 + \tau \mu' + g \cos (G + a_0) + h \cos (H + a_0) \sin \delta_0 + i \cos \delta_0 & (\text{in arc}) \end{aligned}$$

NOTES.—(1) The quantities A' , B' , f' , g' , and G' are to be used instead of A , B , f , g , and G whenever it is necessary to omit the short period terms, as, for example, in computing the ephemeris of a star at ten-day intervals.

(2) The independent star-numbers are more convenient, when only one or two apparent positions of a star are required, or when BESSEL'S star-constants are not known with sufficient accuracy. Otherwise, the Besselian star-numbers are more convenient.

(3) In using the star-constants of the *British Association Catalogue*, $a, b, c, d, a', b', c', d'$, with the star-numbers of this Ephemeris, the quantities to be formed are $Ac, Bd, Ca, Db, -Ac', -Bd', -Ca', -Db'$.

BESSELIAN STAR-NUMBERS, 1903.

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(CONSTANTS OF STRUVE AND PETERS.)

FOR WASHINGTON MEAN MIDNIGHT.

Solar Day. (Sid. Hour.)	Log A.	Log B.	Log C.	Log D.	Solar Day. (Sid. Hour.)	Log A.	Log B.	Log C.	Log D.
Jan. 0	+9.13719	+0.9646	-0.49653	+1.30443	Feb. 15	+9.41891	+0.9304	-1.19360	+1.05398
1	9.14696	0.9626	0.53979	1.30305	16	9.42001	0.9310	1.19859	1.04226
2	9.15406	0.9606	0.57900	1.30152	17	9.42210	0.9321	1.20339	1.03008
3	9.15928	0.9592	0.61484	1.29985	18	9.42543	0.9335	1.20800	1.01741
h 4	9.16352	0.9585	0.64781	1.29804	19	9.42983	0.9345	1.21243	1.00422
(7.0) 5	+9.16800	+0.9587	-0.67832	+1.29608	h (10.0) 20	+9.43507	+0.9349	-1.21668	+0.99050
6	9.17365	0.9597	0.70670	1.29398	21	9.44062	0.9345	1.22076	0.97618
7	9.18130	0.9611	0.73320	1.29173	22	9.44592	0.9331	1.22466	0.96125
8	9.19134	0.9626	0.75805	1.28932	23	9.45042	0.9310	1.22839	0.94566
9	9.20338	0.9638	0.78142	1.28677	24	9.45375	0.9284	1.23196	0.92935
10	+9.21680	+0.9645	-0.80346	+1.28407	25	+9.45580	+0.9258	-1.23536	+0.91228
11	9.23055	0.9642	0.82430	1.28121	26	9.45671	0.9235	1.23861	0.89437
12	9.24360	0.9631	0.84406	1.27819	27	9.45683	0.9219	1.24169	0.87557
13	9.25514	0.9613	0.86282	1.27501	28	9.45663	0.9213	1.24462	0.85578
14	9.26459	0.9589	0.88067	1.27167	Mar. 1	9.45678	0.9216	1.24740	0.83492
15	+9.27171	+0.9564	-0.89768	+1.26817	2	+9.45773	+0.9228	-1.25002	+0.81288
16	9.27677	0.9542	0.91392	1.26450	3	9.45994	0.9243	1.25249	0.78953
17	9.28026	0.9527	0.92944	1.26067	4	9.46345	0.9260	1.25482	0.76473
18	9.28296	0.9519	0.94429	1.25666	5	9.46808	0.9272	1.25700	0.73830
19	9.28580	0.9521	0.95851	1.25247	6	9.47341	0.9276	1.25904	0.71004
h 20	+9.28954	+0.9529	-0.97215	+1.24811	h (11.0) 7	+9.47894	+0.9272	-1.26093	+0.67968
(8.0) 21	9.29471	0.9541	0.98524	1.24356	8	9.48408	0.9259	1.26269	0.64692
22	9.30143	0.9553	0.99781	1.23883	9	9.48833	0.9239	1.26430	0.61137
23	9.30956	0.9561	1.00990	1.23391	10	9.49144	0.9217	1.26577	0.57252
24	9.31844	0.9562	1.02152	1.22880	11	9.49325	0.9194	1.26711	0.52974
25	+9.32741	+0.9554	-1.03270	+1.22348	12	+9.49395	+0.9177	-1.26831	+0.48216
26	9.33570	0.9537	1.04347	1.21796	13	9.49394	0.9168	1.26938	0.42860
27	9.34270	0.9514	1.05384	1.21224	14	9.49373	0.9170	1.27031	0.36737
28	9.34807	0.9487	1.06383	1.20630	15	9.49375	0.9181	1.27111	0.29596
29	9.35182	0.9460	1.07346	1.20014	16	9.49451	0.9198	1.27178	0.21034
30	+9.35411	+0.9437	-1.08275	+1.19376	17	+9.49630	+0.9219	-1.27232	+0.10348
31	9.35559	0.9422	1.09171	1.18714	18	9.49913	0.9239	1.27272	9.96134
Feb. 1	9.35695	0.9416	1.10035	1.18029	19	9.50283	0.9253	1.27299	9.74858
2	9.35891	0.9419	1.10868	1.17319	20	9.50699	0.9259	1.27313	+9.31424
3	9.36206	0.9428	1.11672	1.16584	21	9.51111	0.9257	1.27314	-9.17034
h 4	+9.36674	+0.9439	-1.12447	+1.15822	h (12.0) 22	+9.51474	+0.9246	-1.27302	-9.70072
(9.0) 5	9.37291	0.9449	1.13196	1.15034	23	9.51749	0.9229	1.27277	9.93232
6	9.38030	0.9454	1.13918	1.14217	24	9.51922	0.9210	1.27239	0.08240
7	9.38832	0.9452	1.14614	1.13371	25	9.51992	0.9194	1.27188	0.19357
8	9.39619	0.9440	1.15286	1.12495	26	9.51982	0.9184	1.27124	0.28186
9	+9.40327	+0.9420	-1.15934	+1.11588	27	+9.51934	+0.9183	-1.27047	-0.35505
10	9.40910	0.9394	1.16559	1.10647	28	9.51906	0.9192	1.26957	0.41752
11	9.41335	0.9365	1.17162	1.09672	29	9.51935	0.9211	1.26854	0.47198
12	9.41606	0.9339	1.17743	1.08662	30	9.52068	0.9234	1.26738	0.52022
13	9.41755	0.9319	1.18302	1.07614	31	9.52319	0.9259	1.26608	0.56350
14	+9.41830	+0.9307	-1.18841	+1.06527	Apr. 1	+9.52680	+0.9282	-1.26465	-0.60271
15	+9.41891	+0.9304	-1.19360	+1.05398	2	+9.53122	+0.9298	-1.26309	-0.63853

E = + 0.02" = + 0.001"

FOR WASHINGTON MEAN MIDNIGHT.

Solar Day. (Sid. Hour.)		Log A.	Log B.	Log C.	Log D.	Solar Day. (Sid. Hour.)		Log A.	Log B.	Log C.	Log D.
Apr.	1	+9.52680	+0.9282	-1.26465	-0.60271	May	17	+9.64407	+0.9656	-1.01968	-1.22963
	2	9.53122	0.9298	1.26309	0.63853		18	9.64620	0.9646	1.00862	1.23445
	3	9.53599	0.9306	1.26140	0.67148		19	9.64761	0.9639	0.99715	1.23909
	4	9.54063	0.9305	1.25957	0.70196		20	9.64855	0.9639	0.98525	1.24356
	5	9.54468	0.9296	1.25761	0.73031		21	9.64936	0.9647	0.97289	1.24786
h	6	+9.54779	+0.9282	-1.25551	-0.75678	(16.0)	22	+9.65041	+0.9664	-0.96005	-1.25200
(13.0)	7	9.54985	0.9268	1.25327	0.78159		23	9.65206	0.9687	0.94670	1.25597
	8	9.55089	0.9258	1.25090	0.80493		24	9.65453	0.9713	0.93280	1.25979
	9	9.55122	0.9255	1.24838	0.82694		25	9.65789	0.9739	0.91832	1.26345
	10	9.55122	0.9262	1.24572	0.84776		26	9.66198	0.9761	0.90321	1.26696
	11	+9.55136	+0.9278	-1.24292	-0.86749		27	+9.66657	+0.9775	-0.88744	-1.27032
	12	9.55207	0.9302	1.23998	0.88623		28	9.67130	0.9781	0.87096	1.27353
	13	9.55364	0.9330	1.23689	0.90407		29	9.67580	0.9779	0.85371	1.27659
	14	9.55616	0.9358	1.23365	0.92107		30	9.67974	0.9771	0.83562	1.27951
	15	9.55952	0.9382	1.23026	0.93730		31	9.68296	0.9759	0.81663	1.28229
	16	+9.56347	+0.9398	-1.22672	-0.95281	June	1	+9.68540	+0.9748	-0.79665	-1.28493
	17	9.56753	0.9406	1.22303	0.96766		2	9.68714	0.9741	0.77559	1.28744
	18	9.57130	0.9405	1.21918	0.98190		3	9.68846	0.9741	0.75333	1.28980
	19	9.57441	0.9397	1.21516	0.99554		4	9.68966	0.9749	0.72975	1.29204
	20	9.57667	0.9386	1.21099	1.00865		5	9.69107	0.9765	0.70470	1.29414
h	21	+9.57802	+0.9376	-1.20664	-1.02125	h	6	+9.69296	+0.9786	-0.67800	-1.29611
(14.0)	22	9.57863	0.9371	1.20213	1.03336	(17.0)	7	9.69549	0.9809	0.64942	1.29795
	23	9.57880	0.9374	1.19745	1.04501		8	9.69871	0.9830	0.61870	1.29966
	24	9.57899	0.9387	1.19259	1.05623		9	9.70246	0.9847	0.58553	1.30124
	25	9.57959	0.9408	1.18756	1.06704		10	9.70647	0.9855	0.54949	1.30269
	26	+9.58101	+0.9435	-1.18234	-1.07747		11	+9.71043	+0.9855	-0.51006	-1.30403
	27	9.58345	0.9464	1.17693	1.08752		12	9.71406	0.9847	0.46657	1.30523
	28	9.58690	0.9492	1.17133	1.09721		13	9.71712	0.9834	0.41811	1.30631
	29	9.59119	0.9515	1.16553	1.10657		14	9.71951	0.9819	0.36342	1.30727
	30	9.59593	0.9530	1.15953	1.11560		15	9.72123	0.9806	0.30070	1.30811
May	1	+9.60071	+0.9536	-1.15333	-1.12432		16	+9.72247	+0.9797	-0.22724	-1.30882
	2	9.60510	0.9534	1.14691	1.13274		17	9.72348	0.9796	0.13864	1.30942
	3	9.60876	0.9527	1.14027	1.14088		18	9.72458	0.9803	0.02705	1.30989
	4	9.61152	0.9517	1.13341	1.14874		19	9.72609	0.9818	0.87633	1.31024
	5	9.61340	0.9510	1.12632	1.15633		20	9.72822	0.9836	0.64338	1.31047
h	6	+9.61457	+0.9508	-1.11898	-1.16367	h	21	+9.73106	+0.9855	-0.10569	-1.31058
(15.0)	7	9.61534	0.9514	1.11140	1.17076	(18.0)	22	9.73456	0.9871	+0.26679	1.31057
	8	9.61614	0.9530	1.10357	1.17761		23	9.73855	0.9882	0.69649	1.31044
	9	9.61729	0.9553	1.09546	1.18422		24	9.74273	0.9883	0.90812	1.31018
	10	9.61914	0.9581	1.08708	1.19062		25	9.74682	0.9877	0.64969	1.30981
	11	+9.62180	+0.9610	-1.07842	-1.19680		26	+9.75051	+0.9863	+0.15618	-1.30932
	12	9.62524	0.9636	1.06945	1.20276		27	9.75360	0.9846	0.24152	1.30870
	13	9.62925	0.9655	1.06018	1.20852		28	9.75600	0.9827	0.31271	1.30797
	14	9.63347	0.9667	1.05058	1.21409		29	9.75778	0.9811	0.37374	1.30711
	15	9.63756	0.9669	1.04064	1.21946		30	9.75909	0.9801	0.42713	1.30613
	16	+9.64118	+0.9665	-1.03034	-1.22464	July	1	+9.76020	+0.9799	+0.47456	-1.30503
	17	+9.64407	+0.9656	-1.01968	-1.22963		2	+9.76138	+0.9805	+0.51720	-1.30380

BESSELIAN STAR NUMBERS, 1903.

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(CONSTANTS OF STRUVE AND PETERS.)

FOR WASHINGTON MEAN MIDNIGHT.

Solar Day. (Sid. Hour.)	Log A.	Log B.	Log C.	Log D.	Solar Day. (Sid. Hour.)	Log A.	Log B.	Log C.	Log D.		
July	1	+ 9.76020	+ 0.9799	+ 0.47456	- 1.30503	Aug.	16	+ 9.84353	+ 0.9594	+ 1.17619	- 1.08884
	2	9.76138	0.9805	0.51720	1.30380		17	9.84605	0.9594	1.18156	1.07895
	3	9.76290	0.9817	0.55591	1.30245		18	9.84866	0.9585	1.18675	1.06870
	4	9.76490	0.9833	0.59134	1.30098		19	9.85109	0.9567	1.19176	1.05807
	5	9.76749	0.9848	0.62398	1.29938		20	9.85314	0.9544	1.19660	1.04704
b	6	+ 9.77055	+ 0.9858	+ 0.65423	- 1.29765	h	21	+ 9.85469	+ 0.9517	+ 1.20126	- 1.03560
(19.0)	7	9.77392	0.9862	0.68239	1.29580	(22.0)	22	9.85572	0.9491	1.20575	1.02371
	8	9.77731	0.9858	0.70873	1.29382		23	9.85625	0.9470	1.21008	1.01136
	9	9.78045	0.9845	0.73344	1.29171		24	9.85651	0.9457	1.21425	0.99851
	10	9.78316	0.9826	0.75672	1.28946		25	9.85667	0.9453	1.21825	0.98514
	11	+ 9.78531	+ 0.9804	+ 0.77869	- 1.28709		26	+ 9.85694	+ 0.9457	+ 1.22210	- 0.97121
	12	9.78684	0.9782	0.79950	1.28458		27	9.85756	0.9468	1.22579	0.95669
	13	9.78789	0.9765	0.81924	1.28193		28	9.85860	0.9481	1.22933	0.94153
	14	9.78863	0.9754	0.83801	1.27915		29	9.86007	0.9493	1.23272	0.92569
	15	9.78935	0.9751	0.85589	1.27622		30	9.86188	0.9500	1.23596	0.90911
	16	+ 9.79031	+ 0.9757	+ 0.87295	- 1.27316		31	+ 9.86389	+ 0.9498	+ 1.23906	- 0.89174
	17	9.79176	0.9767	0.88925	1.26995	Sept.	1	9.86585	0.9489	1.24201	0.87351
	18	9.79378	0.9780	0.90485	1.26659		2	9.86754	0.9470	1.24482	0.85435
	19	9.79641	0.9791	0.91980	1.26309		3	9.86884	0.9447	1.24749	0.83416
	20	9.79951	0.9797	0.93413	1.25944		4	9.86964	0.9422	1.25002	0.81284
h	21	+ 9.80286	+ 0.9796	+ 0.94790	- 1.25563	h	5	+ 9.86996	+ 0.9400	+ 1.25242	- 0.79028
(20.0)	22	9.80620	0.9785	0.96112	1.25167	(23.0)	6	9.86993	0.9384	1.25468	0.76635
	23	9.80928	0.9767	0.97384	1.24754		7	9.86974	0.9376	1.25680	0.74087
	24	9.81187	0.9744	0.98609	1.24326		8	9.86960	0.9378	1.25879	0.71365
	25	9.81388	0.9718	0.99788	1.23881		9	9.86974	0.9389	1.26065	0.68447
	26	+ 9.81530	+ 0.9695	+ 1.00924	- 1.23419		10	+ 9.87035	+ 0.9404	+ 1.26238	- 0.65303
	27	9.81623	0.9677	1.02020	1.22940		11	9.87146	0.9421	1.26398	0.61898
	28	9.81693	0.9666	1.03077	1.22443		12	9.87306	0.9435	1.26544	0.58186
	29	9.81759	0.9664	1.04098	1.21928		13	9.87502	0.9442	1.26678	0.54112
	30	9.81846	0.9670	1.05083	1.21394		14	9.87714	0.9442	1.26799	0.49598
	31	+ 9.81974	+ 0.9680	+ 1.06035	- 1.20842		15	+ 9.87920	+ 0.9432	+ 1.26907	- 0.44543
Aug.	1	9.82149	0.9691	1.06955	1.20270		16	9.88097	0.9416	1.27003	0.38803
	2	9.82369	0.9700	1.07844	1.19678		17	9.88233	0.9395	1.27086	0.32168
	3	9.82622	0.9702	1.08703	1.19066		18	9.88318	0.9374	1.27156	0.24313
	4	9.82882	0.9696	1.09534	1.18432		19	9.88359	0.9357	1.27213	0.14694
h	5	+ 9.83134	+ 0.9681	+ 1.10338	- 1.17776	h	20	+ 9.88367	+ 0.9347	+ 1.27258	- 0.02294
(21.0)	6	9.83350	0.9659	1.11115	1.17098	(0.0)	21	9.88359	0.9347	1.27290	9.84842
	7	9.83516	0.9633	1.11867	1.16397		22	9.88360	0.9356	1.27309	9.55161
	8	9.83626	0.9606	1.12595	1.15671		23	9.88387	0.9373	1.27315	- 7.81833
	9	9.83689	0.9583	1.13298	1.14921		24	9.88453	0.9394	1.27309	+ 9.53547
	10	+ 9.83719	+ 0.9566	+ 1.13979	- 1.14145		25	+ 9.88563	+ 0.9414	+ 1.27290	+ 9.84069
	11	9.83738	0.9558	1.14638	1.13342		26	9.88713	0.9430	1.27259	0.01816
	12	9.83770	0.9558	1.15275	1.12511		27	9.88883	0.9439	1.27214	0.14374
	13	9.83838	0.9565	1.15891	1.11651		28	9.89059	0.9440	1.27157	0.24098
	14	9.83957	0.9576	1.16486	1.10761		29	9.89218	0.9432	1.27087	0.32031
	15	+ 9.84132	+ 0.9587	+ 1.17062	- 1.09839		30	+ 9.89344	+ 0.9418	+ 1.27004	+ 0.38728
	16	+ 9.84353	+ 0.9594	+ 1.17619	- 1.08884	Oct.	1	+ 9.89428	+ 0.9401	+ 1.26908	+ 0.44521

E = + 0.01" = + 0.001"

FOR WASHINGTON MEAN MIDNIGHT.

Solar Day. (Sid. Hour.)	Log A.	Log B.	Log C.	Log D.	Solar Day. (Sid. Hour.)	Log A.	Log B.	Log C.	Log D.		
Oct. 1	+ 9.89428	+ 0.9401	+ 1.26908	+ 0.44521	Nov. 16	+ 9.94111	+ 0.9732	+ 1.04566	+ 1.21679		
2	9.89465	0.9385	1.26799	0.49622	17	9.94207	0.9757	1.03506	1.22231		
3	9.89465	0.9375	1.26676	0.54178	18	9.94340	0.9785	1.02405	1.22763		
4	9.89445	0.9373	1.26541	0.58291	19	9.94512	0.9810	1.01261	1.23275		
5	9.89424	0.9380	1.26392	0.62038	20	9.94714	0.9829	1.00072	1.23769		
h (1.0)	6	+ 9.89426	+ 0.9396	+ 1.26229	+ 0.65478	h (4.0)	21	+ 9.94932	+ 0.9842	+ 0.98835	+ 1.24243
7	9.89466	0.9419	1.26053	0.68654	22	9.95147	0.9845	0.97547	1.24699		
8	9.89555	0.9444	1.25863	0.71604	23	9.95342	0.9841	0.96206	1.25137		
9	9.89695	0.9467	1.25659	0.74356	24	9.95504	0.9832	0.94807	1.25558		
10	9.89876	0.9485	1.25441	0.76933	25	9.95628	0.9822	0.93348	1.25961		
11	+ 9.90080	+ 0.9495	+ 1.25209	+ 0.79355	26	+ 9.95714	+ 0.9813	+ 0.91823	+ 1.26347		
12	9.90286	0.9497	1.24962	0.81638	27	9.95772	0.9810	0.90228	1.26717		
13	9.90474	0.9491	1.24701	0.83796	28	9.95820	0.9814	0.88558	1.27070		
14	9.90624	0.9479	1.24425	0.85841	29	9.95874	0.9827	0.86807	1.27406		
15	9.90733	0.9466	1.24134	0.87783	30	9.95953	0.9846	0.84967	1.27727		
16	+ 9.90798	+ 0.9456	+ 1.23827	+ 0.89630	Dec. 1	+ 9.96071	+ 0.9869	+ 0.83031	+ 1.28032		
17	9.90828	0.9452	1.23505	0.91391	2	9.96232	0.9893	0.80990	1.28322		
18	9.90840	0.9456	1.23168	0.93071	3	9.96434	0.9914	0.78833	1.28596		
19	9.90855	0.9470	1.22814	0.94677	4	9.96666	0.9928	0.76549	1.28855		
20	9.90891	0.9492	1.22444	0.96214	5	9.96911	0.9934	0.74122	1.29099		
h (2.0)	21	+ 9.90961	+ 0.9518	+ 1.22057	+ 0.97687	h (5.0)	6	+ 9.97152	+ 0.9933	+ 0.71537	+ 1.29328
22	9.91075	0.9546	1.21654	0.99099	7	9.97371	0.9924	0.68772	1.29542		
23	9.91227	0.9570	1.21233	1.00455	8	9.97556	0.9911	0.65804	1.29742		
24	9.91409	0.9589	1.20794	1.01758	9	9.97702	0.9898	0.62602	1.29927		
25	9.91601	0.9599	1.20338	1.03011	10	9.97813	0.9887	0.59130	1.30098		
26	+ 9.91784	+ 0.9600	+ 1.19863	+ 1.04216	11	+ 9.97898	+ 0.9883	+ 0.55339	+ 1.30255		
27	9.91942	0.9594	1.19370	1.05376	12	9.97974	0.9887	0.51169	1.30398		
28	9.92062	0.9585	1.18857	1.06494	13	9.98057	0.9898	0.46539	1.30526		
29	9.92139	0.9575	1.18324	1.07571	14	9.98161	0.9915	0.41339	1.30641		
30	9.92177	0.9569	1.17771	1.08610	15	9.98299	0.9935	0.35413	1.30741		
31	+ 9.92193	+ 0.9569	+ 1.17198	+ 1.09613	16	+ 9.98470	+ 0.9954	+ 0.28531	+ 1.30828		
Nov. 1	9.92203	0.9579	1.16603	1.10580	17	9.98672	0.9969	0.20331	1.30901		
2	9.92228	0.9597	1.15986	1.11513	18	9.98891	0.9977	0.10194	1.30960		
3	9.92285	0.9622	1.15346	1.12414	19	9.99112	0.9976	9.96927	1.31005		
4	9.92388	0.9650	1.14683	1.13285	20	9.99317	0.9968	9.77704	1.31037		
h (3.0)	5	+ 9.92538	+ 0.9678	+ 1.13996	+ 1.14125	h (6.0)	21	+ 9.99495	+ 0.9953	+ 9.42326	+ 1.31055
6	9.92733	0.9701	1.13284	1.14937	22	9.99637	0.9936	- 8.83604	1.31059		
7	9.92954	0.9717	1.12546	1.15722	23	9.99742	0.9919	9.60434	1.31049		
8	9.93185	0.9725	1.11781	1.16480	24	9.99818	0.9907	9.86661	1.31025		
9	9.93404	0.9724	1.10989	1.17212	25	9.99876	0.9901	0.02889	1.30988		
10	+ 9.93595	+ 0.9718	+ 1.10168	+ 1.17919	26	+ 9.99934	+ 0.9903	- 0.14665	+ 1.30937		
11	9.93749	0.9709	1.09317	1.18602	27	0.00008	0.9912	0.23908	1.30873		
12	9.93862	0.9700	1.08434	1.19262	28	0.00113	0.9926	0.31513	1.30794		
13	9.93939	0.9697	1.07520	1.19899	29	0.00255	0.9942	0.37971	1.30701		
14	9.93992	0.9700	1.06571	1.20514	30	0.00435	0.9956	0.43579	1.30595		
15	+ 9.94045	+ 0.9712	+ 1.05587	+ 1.21107	31	+ 0.00645	+ 0.9964	- 0.48534	+ 1.30474		
16	+ 9.94111	+ 0.9732	+ 1.04566	+ 1.21679	32	+ 0.00872	+ 0.9965	- 0.52967	+ 1.30340		

E = + 0.00' = + 0.000

(CONSTANTS OF STRUVE AND PETERS.)

FOR WASHINGTON MEAN MIDNIGHT.

Solar Day. (Sid. Hour.)	τ	f		f'		G		H		Log g .	Log h .	i	Log i .
		In Time.		In Time		In Arc.	In Time.	In Arc.	In Time.				
	y	s	s	$^{\circ}$	$h\ m$	$^{\circ}$	$h\ m$					$''$	
Jan. <													

FOR WASHINGTON MEAN MIDNIGHT.

Solar Day. (Sid. Hour.)		τ	f	f'	G		H		Log g .	Log h .	i	Log i .	
			In Time	In Time.	In Arc.	In Time.	In Arc.	In Time.					
		y	s	s	°	'	h	m	°	'	h	m	
Feb.	15	0.1250	+ 0.807	+ 0.809	58 18.2	3 53.2	305 56.7	20 23.8	+1.00056	+1.28534	- 6.77	- 0.8309	
	16	0.1278	0.809	0.816	58 16.4	3 53.1	304 54.2	20 19.6	1.00129	1.28471	6.85	0.8358	
	17	0.1305	0.813	0.822	58 13.1	3 52.9	303 51.6	20 15.4	1.00269	1.28410	6.93	0.8406	
	18	0.1333	0.819	0.828	58 05.9	3 52.4	302 48.8	20 11.2	1.00457	1.28349	7.00	0.8453	
	h	19	0.1360	0.828	0.834	57 54.0	3 51.6	301 45.8	20 07.0	1.00655	1.28290	7.07	0.8497
	(10.0)	20	0.1387	+ 0.838	+ 0.841	57 36.7	3 50.4	300 42.7	20 02.8	+1.00835	+1.28231	- 7.14	- 0.8539
	21	0.1415	0.849	0.847	57 15.3	3 49.0	299 39.5	19 58.6	1.00964	1.28174	7.21	0.8580	
	22	0.1442	0.859	0.853	56 51.2	3 47.4	298 36.1	19 54.4	1.01026	1.28118	7.28	0.8619	
	23	0.1470	0.868	0.858	56 27.2	3 45.8	297 32.6	19 50.2	1.01015	1.28063	7.34	0.8656	
	24	0.1497	0.875	0.864	56 05.6	3 44.4	296 28.9	19 45.9	1.00939	1.28010	7.40	0.8692	
	25	0.1524	+ 0.879	+ 0.870	55 48.3	3 43.2	295 25.1	19 41.7	+1.00821	+1.27958	- 7.46	- 0.8726	
	26	0.1552	0.881	0.876	55 36.5	3 42.4	294 21.2	19 37.4	1.00694	1.27908	7.51	0.8759	
	27	0.1579	0.881	0.881	55 30.2	3 42.0	293 17.2	19 33.1	1.00591	1.27860	7.57	0.8789	
	28	0.1606	0.881	0.887	55 28.7	3 41.9	292 13.1	19 28.9	1.00542	1.27813	7.62	0.8819	
	Mar.	1	0.1634	0.881	0.892	55 29.6	3 42.0	291 08.9	19 24.6	1.00569	1.27768	7.67	0.8846
	2	0.1661	+ 0.883	+ 0.898	55 30.1	3 42.0	290 04.6	19 20.3	+1.00677	+1.27724	- 7.71	- 0.8873	
	3	0.1689	0.887	0.903	55 27.7	3 41.8	289 00.2	19 16.0	1.00856	1.27683	7.76	0.8897	
	4	0.1716	0.894	0.908	55 20.8	3 41.4	287 55.7	19 11.7	1.01077	1.27644	7.80	0.8921	
	5	0.1743	0.904	0.914	55 08.0	3 40.5	286 51.1	19 07.4	1.01309	1.27606	7.84	0.8943	
	h	6	0.1771	0.915	0.919	54 50.1	3 39.3	285 46.5	19 03.1	1.01516	1.27571	7.88	0.8963
(11.0)	7	0.1798	+ 0.927	+ 0.924	54 27.8	3 37.9	284 41.8	18 58.8	+1.01674	+1.27538	- 7.91	- 0.8982	
	8	0.1825	0.938	0.929	54 03.7	3 36.2	283 37.0	18 54.5	1.01765	1.27507	7.94	0.8999	
	9	0.1853	0.947	0.934	53 40.1	3 34.7	282 32.2	18 50.1	1.01783	1.27478	7.97	0.9016	
	10	0.1880	0.954	0.939	53 19.7	3 33.3	281 27.4	18 45.8	1.01745	1.27451	8.00	0.9030	
	11	0.1908	0.958	0.944	53 04.3	3 32.3	280 22.5	18 41.5	1.01666	1.27427	8.02	0.9044	
	12	0.1935	+ 0.959	+ 0.949	52 55.2	3 31.7	279 17.6	18 37.2	+1.01583	+1.27405	- 8.05	- 0.9056	
	13	0.1962	0.959	0.954	52 51.9	3 31.5	278 12.6	18 32.8	1.01527	1.27386	8.07	0.9066	
	14	0.1990	0.959	0.959	52 53.3	3 31.6	277 07.6	18 28.5	1.01526	1.27368	8.08	0.9076	
	15	0.2017	0.959	0.964	52 57.2	3 31.8	276 02.7	18 24.2	1.01598	1.27353	8.10	0.9084	
	16	0.2044	0.961	0.968	53 01.1	3 32.1	274 57.7	18 19.8	1.01739	1.27341	8.11	0.9090	
	17	0.2072	+ 0.964	+ 0.973	53 02.2	3 32.1	273 52.7	18 15.5	+1.01936	+1.27331	- 8.12	- 0.9096	
	18	0.2099	0.971	0.978	52 58.9	3 31.9	272 47.7	18 11.2	1.02163	1.27324	8.13	0.9100	
	19	0.2127	0.979	0.983	52 50.3	3 31.4	271 42.7	18 06.8	1.02389	1.27319	8.13	0.9102	
	20	0.2154	0.988	0.988	52 36.9	3 30.5	270 37.8	18 02.5	1.02581	1.27316	8.14	0.9104	
	h	21	0.2181	0.998	0.993	52 20.0	3 29.3	269 32.9	17 58.2	1.02718	1.27316	8.14	0.9104
	(12.0)	22	0.2209	+ 1.006	+ 0.997	52 01.9	3 28.1	268 28.0	17 53.9	+1.02787	+1.27318	- 8.13	- 0.9103
	23	0.2236	1.013	1.002	51 44.8	3 27.0	267 23.1	17 49.5	1.02787	1.27323	8.13	0.9100	
	24	0.2264	1.017	1.007	51 31.0	3 26.1	266 18.3	17 45.2	1.02737	1.27330	8.12	0.9096	
	25	0.2291	1.018	1.012	51 22.1	3 25.5	265 13.6	17 40.9	1.02663	1.27339	8.11	0.9091	
	26	0.2318	1.018	1.017	51 18.6	3 25.2	264 08.9	17 36.6	1.02600	1.27351	8.10	0.9085	
	27	0.2346	+ 1.017	+ 1.021	51 20.2	3 25.3	263 04.3	17 32.3	+1.02578	+1.27365	- 8.09	- 0.9077	
	28	0.2373	1.016	1.026	51 24.7	3 25.6	261 59.8	17 28.0	1.02624	1.27382	8.07	0.9068	
	29	0.2400	1.017	1.031	51 30.6	3 26.0	260 55.4	17 23.7	1.02746	1.27401	8.05	0.9058	
	30	0.2428	1.020	1.036	51 34.6	3 26.3	259 51.1	17 19.4	1.02941	1.27422	8.03	0.9046	
	31	0.2455	1.026	1.041	51 34.7	3 26.3	258 46.9	17 15.1	1.03193	1.27446	8.00	0.9033	
	Apr.	1	0.2483	+ 1.034	+ 1.046	51 29.5	3 26.0	257 42.8	17 10.9	+1.03472	+1.27472	- 7.98	- 0.9019
	2	0.2510	+ 1.045	+ 1.051	51 18.8	3 25.3	256 38.8	17 06.6	+1.03742	+1.27500	- 7.95	- 0.9003	

INDEPENDENT STAR-NUMBERS, 1903.

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(CONSTANTS OF STRUVE AND PETERS.)

FOR WASHINGTON MEAN MIDNIGHT.

Solar Day. (Sid. Hour.)		τ	f	f'	G		H		Log g .	Log h .	i	Log i .	
			In Time.	In Time.	In Arc.	In Time.	In Arc.	In Time.					
		y	s	s	°	h m	°	h m					
Apr.	1	0.2483	+ 1.034	+ 1.046	51 29.5	3 26.0	257 42.8	17 10.9	+1.03472	+1.27472	-7.98	-0.9019	
	2	0.2510	1.045	1.051	51 18.8	3 25.3	256 38.8	17 06.6	1.03742	1.27500	7.95	0.9003	
	3	0.2537	1.056	1.056	51 03.2	3 24.2	255 34.9	17 02.3	1.03976	1.27530	7.92	0.8987	
	4	0.2565	1.068	1.061	50 44.7	3 23.0	254 31.2	16 58.1	1.04153	1.27562	7.88	0.8968	
	5	0.2592	1.078	1.066	50 25.5	3 21.7	253 27.6	16 53.8	1.04263	1.27596	7.85	0.8949	
	h	6	0.2619	+ 1.085	+ 1.071	50 08.1	3 20.5	252 24.2	16 49.6	+1.04310	+1.27632	-7.81	-0.8928
	(13.0)	7	0.2647	1.091	1.076	49 54.7	3 19.6	251 20.9	16 45.4	1.04314	1.27670	7.77	0.8905
	8	0.2674	1.093	1.082	49 46.7	3 19.1	250 17.8	16 41.2	1.04297	1.27710	7.73	0.8881	
	9	0.2702	1.094	1.087	49 44.3	3 19.0	249 14.8	16 37.0	1.04295	1.27752	7.69	0.8856	
	10	0.2729	1.094	1.092	49 46.9	3 19.1	248 12.0	16 32.8	1.04334	1.27795	7.64	0.8830	
	11	0.2756	+ 1.094	+ 1.098	49 52.7	3 19.5	247 09.3	16 28.6	+1.04434	+1.27840	-7.59	-0.8802	
	12	0.2784	1.096	1.103	49 59.1	3 19.9	246 06.8	16 24.5	1.04602	1.27887	7.54	0.8772	
	13	0.2811	1.100	1.109	50 03.9	3 20.3	245 04.5	16 20.3	1.04830	1.27935	7.48	0.8741	
	14	0.2838	1.107	1.114	50 05.0	3 20.3	244 02.4	16 16.2	1.05099	1.27985	7.43	0.8709	
	15	0.2866	1.115	1.120	50 01.2	3 20.1	243 00.4	16 12.0	1.05378	1.28036	7.37	0.8675	
	16	0.2893	+ 1.125	+ 1.126	49 52.2	3 19.5	241 58.6	16 07.9	+1.05639	+1.28088	-7.31	-0.8640	
	17	0.2921	1.136	1.132	49 39.4	3 18.6	240 57.0	16 03.8	1.05853	1.28142	7.25	0.8603	
	18	0.2948	1.146	1.137	49 24.3	3 17.6	239 55.6	15 59.7	1.06006	1.28196	7.18	0.8564	
	19	0.2975	1.154	1.143	49 09.1	3 16.6	238 54.4	15 55.6	1.06093	1.28252	7.12	0.8524	
	20	0.3003	1.160	1.149	48 56.0	3 15.7	237 53.4	15 51.6	1.06130	1.28309	7.05	0.8482	
h	21	0.3030	+ 1.164	+ 1.156	48 46.8	3 15.1	236 52.5	15 47.5	+1.06131	+1.28367	-6.98	-0.8439	
(14.0)	22	0.3057	1.165	1.162	48 42.6	3 14.8	235 51.8	15 43.5	1.06129	1.28426	6.91	0.8394	
23	0.3085	1.165	1.168	48 43.0	3 14.9	234 51.3	15 39.4	1.06154	1.28486	6.83	0.8347		
24	0.3112	1.166	1.174	48 47.1	3 15.1	233 51.0	15 35.4	1.06230	1.28546	6.76	0.8298		
25	0.3140	1.168	1.181	48 52.9	3 15.5	232 50.9	15 31.4	1.06376	1.28607	6.68	0.8248		
26	0.3167	+ 1.171	+ 1.187	48 57.9	3 15.9	231 51.1	15 27.4	+1.06591	+1.28669	-6.60	-0.8196		
27	0.3194	1.178	1.194	49 00.0	3 16.0	230 51.5	15 23.4	1.06866	1.28731	6.52	0.8142		
28	0.3222	1.187	1.201	48 57.5	3 15.8	229 52.0	15 19.5	1.07175	1.28794	6.44	0.8086		
29	0.3249	1.199	1.207	48 49.7	3 15.3	228 52.7	15 15.5	1.07489	1.28856	6.35	0.8028		
30	0.3277	1.212	1.214	48 36.9	3 14.5	227 53.6	15 11.6	1.07779	1.28919	6.26	0.7968		
May	1	0.3304	+ 1.226	+ 1.221	48 20.4	3 13.4	226 54.7	15 07.6	+1.08025	+1.28982	-6.17	-0.7906	
	2	0.3331	1.238	1.228	48 02.5	3 12.2	225 56.1	15 03.7	1.08207	1.29046	6.08	0.7842	
	3	0.3359	1.249	1.235	47 45.1	3 11.0	224 57.6	14 59.8	1.08330	1.29109	5.99	0.7775	
	4	0.3386	1.257	1.242	47 30.5	3 10.0	223 59.4	14 56.0	1.08403	1.29173	5.90	0.7706	
	5	0.3413	1.262	1.250	47 20.1	3 09.3	223 01.3	14 52.1	1.08450	1.29236	5.80	0.7636	
	h	6	0.3441	+ 1.266	+ 1.257	47 14.7	3 09.0	222 03.5	+1.08495	+1.29299	-5.71	-0.7562	
	(15.0)	7	0.3468	1.268	1.265	47 14.3	3 09.0	221 05.8	1.08565	1.29362	5.61	0.7486	
	8	0.3496	1.270	1.272	47 17.2	3 09.1	220 08.4	14 40.6	1.08686	1.29424	5.51	0.7408	
	9	0.3523	1.274	1.280	47 21.8	3 09.5	219 11.1	14 36.7	1.08863	1.29486	5.40	0.7327	
	10	0.3550	1.279	1.287	47 25.5	3 09.7	218 14.0	14 32.9	1.09098	1.29548	5.30	0.7243	
	11	0.3578	+ 1.287	+ 1.295	47 26.4	3 09.8	217 17.2	14 29.1	+1.09377	+1.29609	-5.20	-0.7157	
	12	0.3605	1.297	1.303	47 23.1	3 09.5	216 20.5	14 25.4	1.09675	1.29670	5.09	0.7067	
	13	0.3632	1.309	1.311	47 15.0	3 09.0	215 24.0	14 21.6	1.09966	1.29730	4.98	0.6974	
	14	0.3660	1.322	1.319	47 02.8	3 08.2	214 27.6	14 17.8	1.10221	1.29789	4.87	0.6878	
	15	0.3687	1.334	1.327	46 47.6	3 07.2	213 31.4	14 14.1	1.10427	1.29847	4.76	0.6779	
	16	0.3715	+ 1.346	+ 1.335	46 31.5	3 06.1	212 35.4	14 10.4	+1.10573	+1.29905	-4.65	-0.6676	
	17	0.3742	+ 1.354	+ 1.344	46 16.5	3 05.1	211 39.6	14 06.6	+1.10662	+1.29961	-4.54	-0.6569	

FOR WASHINGTON MEAN MIDNIGHT.

Solar Day (Sid. Hour.)		τ	f	f'	G		H		Log g .	Log h .	i	Log i
			In Time.	In Time.	In Arc.	In Time.	In Arc.	In Time.				
		y	s	s	$^{\circ}$	h m	$^{\circ}$	h m				
May	17	0.3742	+ 1.354	+ 1.344	46 16.5	3 05.1	211 39.6	14 06.6	+1.10662	+1.29961	- 4.54	- 0.6569
	18	0.3769	1.361	1.352	46 04.3	3 04.3	210 44.0	14 02.9	1.10714	1.30017	4.42	0.6459
	19	0.3797	1.366	1.360	45 56.1	3 03.7	209 48.5	13 59.2	1.10748	1.30072	4.31	0.6344
	20	0.3824	1.369	1.368	45 52.3	3 03.5	208 53.1	13 55.5	1.10792	1.30126	4.19	0.6225
	21	0.3851	1.371	1.377	45 52.5	3 03.5	207 57.9	13 51.9	1.10872	1.30179	4.07	0.6101
	(16.0) 22	0.3879	+ 1.374	+ 1.386	45 54.7	3 03.6	207 02.8	13 48.2	+1.11009	+1.30230	- 3.96	- 0.5973
	23	0.3906	1.380	1.395	45 57.3	3 03.8	206 07.9	13 44.5	1.11206	1.30280	3.84	0.5839
	24	0.3934	1.387	1.404	45 58.0	3 03.9	205 13.2	13 40.9	1.11462	1.30330	3.72	0.5705
	25	0.3961	1.398	1.413	45 55.0	3 03.7	204 18.6	13 37.2	1.11758	1.30378	3.59	0.5556
	26	0.3988	1.411	1.422	45 47.3	3 03.2	203 24.1	13 33.6	1.12069	1.30424	3.47	0.5405
	27	0.4016	+ 1.426	+ 1.431	45 35.0	3 02.3	202 29.7	13 30.0	+1.12366	+1.30469	- 3.35	- 0.5247
	28	0.4043	1.442	1.440	45 18.7	3 01.2	201 35.5	13 26.4	1.12632	1.30513	3.22	0.5082
	29	0.4071	1.457	1.449	45 00.1	3 00.0	200 41.4	13 22.8	1.12844	1.30555	3.10	0.4919
	30	0.4098	1.470	1.458	44 41.1	2 58.7	199 47.4	13 19.2	1.13001	1.30596	2.97	0.4729
	31	0.4125	1.481	1.467	44 23.7	2 57.6	198 53.6	13 15.6	1.13106	1.30635	2.84	0.4539
June	1	0.4153	+ 1.490	+ 1.476	44 09.6	2 56.6	197 59.9	13 12.0	+1.13177	+1.30672	- 2.72	- 0.4339
	2	0.4180	1.496	1.485	43 59.9	2 56.0	197 06.2	13 08.4	1.13233	1.30708	2.59	0.4128
	3	0.4207	1.500	1.495	43 54.7	2 55.6	196 12.7	13 04.8	1.13301	1.30743	2.46	0.3906
	4	0.4235	1.504	1.504	43 53.1	2 55.5	195 19.3	13 01.3	1.13401	1.30776	2.33	0.3679
	5	0.4262	1.509	1.514	43 53.8	2 55.6	194 26.0	12 57.7	1.13551	1.30807	2.20	0.3420
	(17.0) 6	0.4290	+ 1.516	+ 1.523	43 54.7	2 55.6	193 32.8	12 54.2	+1.13750	+1.30836	- 2.07	- 0.3152
	7	0.4317	1.525	1.533	43 53.8	2 55.6	192 39.6	12 50.6	1.13995	1.30864	1.94	0.2867
	8	0.4344	1.536	1.543	43 49.5	2 55.3	191 46.6	12 47.1	1.14265	1.30889	1.80	0.2560
	9	0.4372	1.549	1.553	43 41.1	2 54.7	190 53.6	12 43.6	1.14538	1.30913	1.67	0.2228
	10	0.4399	1.564	1.562	43 28.8	2 53.9	190 00.7	12 40.0	1.14789	1.30936	1.54	0.1867
	11	0.4426	+ 1.578	+ 1.572	43 13.0	2 52.9	189 07.8	12 36.5	+1.14999	+1.30956	- 1.40	- 0.1473
	12	0.4454	1.591	1.581	42 55.6	2 51.7	188 15.0	12 33.0	1.15156	1.30975	1.27	0.1038
	13	0.4481	1.602	1.591	42 38.4	2 50.6	187 22.2	12 29.5	1.15261	1.30992	1.14	0.0554
	14	0.4509	1.611	1.601	42 22.9	2 49.5	186 29.5	12 26.0	1.15321	1.31007	1.00	0.0007
	15	0.4536	1.618	1.611	42 10.9	2 48.7	185 36.9	12 22.5	1.15355	1.31020	0.87	9.9380
July	16	0.4563	+ 1.622	+ 1.621	42 02.7	2 48.2	184 44.3	12 19.0	+1.15385	+1.31031	- 0.73	- 9.8645
	17	0.4591	1.626	1.631	41 58.3	2 47.9	183 51.7	12 15.4	1.15436	1.31040	0.60	9.7759
	18	0.4618	1.630	1.640	41 56.8	2 47.8	182 59.1	12 11.9	1.15530	1.31048	0.46	9.6643
	19	0.4645	1.636	1.650	41 56.4	2 47.8	182 06.5	12 08.4	1.15676	1.31053	0.33	9.5136
	20	0.4673	1.644	1.660	41 55.4	2 47.7	181 14.0	12 04.9	1.15874	1.31057	0.19	9.2806
	(18.0) 21	0.4700	+ 1.655	+ 1.670	41 51.7	2 47.4	180 21.4	12 01.4	+1.16118	+1.31059	- 0.06	- 8.7429
	22	0.4728	1.668	1.680	41 44.3	2 47.0	179 28.9	11 57.9	1.16386	1.31059	+ 0.08	+ 8.9040
	23	0.4755	1.684	1.690	41 32.6	2 46.2	178 36.4	11 54.4	1.16653	1.31056	0.22	9.3337
	24	0.4782	1.700	1.700	41 16.9	2 45.1	177 43.9	11 50.9	1.16897	1.31052	0.35	9.5454
	25	0.4810	1.716	1.710	40 58.3	2 43.9	176 51.3	11 47.4	1.17100	1.31047	0.49	9.6869
	26	0.4837	+ 1.731	+ 1.719	40 38.6	2 42.6	175 58.8	11 43.9	+1.17255	+1.31039	+ 0.62	+ 9.7934
	27	0.4865	1.743	1.729	40 19.5	2 41.3	175 06.2	11 40.4	1.17358	1.31029	0.76	9.8788
	28	0.4892	1.753	1.739	40 02.8	2 40.2	174 13.6	11 36.9	1.17419	1.31018	0.89	9.9300
	29	0.4919	1.760	1.749	39 49.7	2 39.3	173 21.0	11 33.4	1.17459	1.31004	1.03	0.0110
	30	0.4947	1.765	1.758	39 40.8	2 38.7	172 28.4	11 29.9	1.17496	1.30989	1.16	0.0644
July	1	0.4974	+ 1.770	+ 1.768	39 35.7	2 38.4	171 35.6	11 26.4	+1.17554	+1.30972	+ 1.29	+ 0.1118
	2	0.5001	+ 1.774	+ 1.778	39 33.4	2 38.2	170 43.0	11 22.9	+1.17648	+1.30953	+ 1.43	+ 0.1544

(CONSTANTS OF STRUVE AND PETERS.)

FOR WASHINGTON MEAN MIDNIGHT.

Solar Day. (Sid. Hour.)	τ	f	f'	G		H		Log g .	Log h .	i	Log i .
		In Time.	In Time.	In Arc.	In Time.	In Arc.	In Time.				
July	y	s	s	°	h m	°	h m			"	
1	0.4974	+ 1.770	+ 1.768	39 35.7	2 38.4	171 35.6	11 26.4	+1.17554	+1.30972	+ 1.29	+ 0.1118
2	0.5001	1.774	1.778	39 33.4	2 38.2	170 43.0	11 22.9	1.17648	1.30953	1.43	0.1544
3	0.5029	1.781	1.788	39 32.2	2 38.1	169 50.3	11 19.4	1.17787	1.30932	1.56	0.1932
4	0.5056	1.789	1.798	39 30.5	2 38.0	168 57.5	11 15.9	1.17970	1.30910	1.69	0.2286
5	0.5084	1.800	1.807	39 26.2	2 37.7	168 04.6	11 12.3	1.18184	1.30885	1.82	0.2612
h	0.5111	+ 1.812	+ 1.817	39 18.6	2 37.2	167 11.7	11 08.8	+1.18411	+1.30859	+ 1.96	+ 0.2915
(19.0)	0.5138	1.826	1.826	39 07.0	2 36.5	166 18.7	11 05.3	1.18629	1.30831	2.09	0.3196
8	0.5166	1.841	1.836	38 52.1	2 35.5	165 25.7	11 01.7	1.18815	1.30802	2.22	0.3460
9	0.5193	1.854	1.845	38 35.1	2 34.3	164 32.5	10 58.2	1.18957	1.30771	2.35	0.3707
10	0.5220	1.866	1.855	38 17.3	2 33.2	163 39.3	10 54.6	1.19049	1.30738	2.48	0.3940
11	0.5248	+ 1.875	+ 1.864	38 00.5	2 32.0	162 46.0	10 51.1	+1.19098	+1.30703	+ 2.61	+ 0.4159
12	0.5275	1.882	1.873	37 46.2	2 31.1	161 52.7	10 47.5	1.19110	1.30667	2.73	0.4367
13	0.5303	1.886	1.882	37 35.5	2 30.4	160 59.2	10 44.0	1.19111	1.30630	2.86	0.4565
14	0.5330	1.889	1.892	37 28.6	2 29.9	160 05.6	10 40.4	1.19118	1.30591	2.99	0.4753
15	0.5357	1.892	1.901	37 24.9	2 29.7	159 11.9	10 36.8	1.19154	1.30550	3.11	0.4931
16	0.5385	+ 1.897	+ 1.910	37 23.2	2 29.5	158 18.1	10 33.2	+1.19234	+1.30508	+ 3.24	+ 0.5102
17	0.5412	1.903	1.919	37 21.7	2 29.4	157 24.2	10 29.6	1.19364	1.30464	3.36	0.5265
18	0.5439	1.912	1.928	37 18.9	2 29.3	156 30.2	10 26.0	1.19539	1.30419	3.48	0.5421
19	0.5467	1.923	1.937	37 13.2	2 28.9	155 36.0	10 22.4	1.19747	1.30373	3.61	0.5570
20	0.5494	1.937	1.946	37 03.7	2 28.2	154 41.7	10 18.8	1.19966	1.30325	3.73	0.5714
h	0.5522	+ 1.952	+ 1.954	36 50.3	2 27.4	153 47.2	10 15.2	+1.20174	+1.30276	+ 3.85	+ 0.5851
(20.0)	0.5549	1.967	1.963	36 33.7	2 26.2	152 52.6	10 11.5	1.20352	1.30226	3.97	0.5984
23	0.5576	1.981	1.972	36 15.2	2 25.0	151 57.9	10 07.9	1.20488	1.30175	4.08	0.6111
24	0.5604	1.993	1.981	35 56.7	2 23.8	151 03.1	10 04.2	1.20576	1.30123	4.20	0.6233
25	0.5631	2.003	1.989	35 39.5	2 22.6	150 08.1	10 00.6	1.20621	1.30069	4.32	0.6351
26	0.5659	+ 2.009	+ 1.997	35 25.4	2 21.7	149 13.0	9 56.9	+1.20635	+1.30014	+ 4.43	+ 0.6465
27	0.5686	2.013	2.005	35 15.1	2 21.0	148 17.7	9 53.2	1.20636	1.29959	4.54	0.6574
28	0.5713	2.017	2.014	35 08.7	2 20.6	147 22.2	9 49.5	1.20648	1.29902	4.66	0.6680
29	0.5741	2.020	2.022	35 05.5	2 20.4	146 26.6	9 45.8	1.20687	1.29845	4.77	0.6782
30	0.5768	2.024	2.030	35 04.3	2 20.3	145 30.9	9 42.1	1.20763	1.29787	4.88	0.6881
31	0.5795	+ 2.030	+ 2.038	35 03.4	2 20.2	144 35.0	9 38.4	+1.20882	+1.29728	+ 4.98	+ 0.6976
Aug.	1	0.5823	2.038	35 01.0	2 20.1	143 38.9	9 34.6	1.21036	1.29669	5.09	0.7068
2	0.5850	2.048	2.054	34 55.9	2 19.7	142 42.7	9 30.9	1.21211	1.29609	5.20	0.7157
3	0.5878	2.060	2.061	34 47.3	2 19.2	141 46.3	9 27.1	1.21389	1.29548	5.30	0.7243
4	0.5905	2.073	2.069	34 35.3	2 18.4	140 49.7	9 23.3	1.21545	1.29487	5.40	0.7326
h	0.5932	+ 2.085	+ 2.077	34 20.7	2 17.4	139 53.0	9 19.6	+1.21670	+1.29425	+ 5.50	+ 0.7406
(21.0)	0.5960	2.095	2.085	34 04.7	2 16.3	138 56.1	9 15.8	1.21748	1.29364	5.60	0.7484
7	0.5987	2.103	2.092	33 49.0	2 15.3	137 59.0	9 11.9	1.21780	1.29302	5.70	0.7559
8	0.6014	2.108	2.099	33 35.2	2 14.3	137 01.7	9 08.1	1.21775	1.29239	5.80	0.7632
9	0.6042	2.111	2.106	33 24.2	2 13.6	136 04.2	9 04.3	1.21746	1.29176	5.89	0.7702
10	0.6069	+ 2.113	+ 2.113	33 17.1	2 13.1	135 06.6	9 00.4	+1.21716	+1.29114	+ 5.98	+ 0.7770
11	0.6097	2.114	2.120	33 13.5	2 12.9	134 08.7	8 56.6	1.21705	1.29051	6.08	0.7836
12	0.6124	2.115	2.127	33 12.5	2 12.8	133 10.7	8 52.7	1.21729	1.28988	6.17	0.7900
13	0.6151	2.119	2.134	33 12.6	2 12.8	132 12.4	8 48.8	1.21798	1.28925	6.25	0.7962
14	0.6179	2.124	2.141	33 12.4	2 12.8	131 14.0	8 44.9	1.21915	1.28863	6.34	0.8021
15	0.6206	+ 2.133	+ 2.148	33 09.9	2 12.7	130 15.4	8 41.0	+1.22070	+1.28801	+ 6.42	+ 0.8079
16	0.6233	+ 2.144	+ 2.155	33 04.4	2 12.3	129 16.6	8 37.1	+1.22245	+1.28739	+ 6.51	+ 0.8134

FOR WASHINGTON MEAN MIDNIGHT.

Solar Day. (Sid. Hour.)	τ	f		G		H		Log g .	Log h .	i	Log i .
		In Time.	In Time.	In Arc.	In Time.	In Arc.	In Time.				
	y	s	s	°	h m	°	h m			"	
Aug. 16	0.6233	+ 2.144	+ 2.155	33 04.4	2 12.3	129 16.6	8 37.1	+1.22245	+1.28739	+6.51	+0.8134
17	0.6261	2.156	2.161	32 55.1	2 11.7	128 17.6	8 33.2	1.22421	1.28678	6.59	0.8188
18	0.6288	2.169	2.168	32 42.4	2 10.8	127 18.4	8 29.2	1.22578	1.28617	6.67	0.8240
19	0.6316	2.182	2.174	32 27.5	2 09.8	126 19.0	8 25.3	1.22701	1.28556	6.74	0.8290
20	0.6343	2.192	2.180	32 11.7	2 08.8	125 19.5	8 21.3	1.22780	1.28496	6.82	0.8339
h 21	0.6370	+ 2.200	+ 2.186	31 56.7	2 07.8	124 19.7	8 17.3	+1.22816	+1.28437	+6.90	+0.8385
(22.0) 22	0.6398	2.205	2.192	31 43.8	2 06.9	123 19.7	8 13.3	1.22817	1.28379	6.97	0.8430
23	0.6425	2.207	2.198	31 34.5	2 06.3	122 19.6	8 09.3	1.22798	1.28322	7.04	0.8473
24	0.6453	2.209	2.204	31 28.9	2 05.9	121 19.2	8 05.3	1.22781	1.28265	7.10	0.8515
25	0.6480	2.210	2.210	31 26.9	2 05.8	120 18.7	8 01.3	1.22781	1.28209	7.17	0.8555
26	0.6507	+ 2.211	+ 2.216	31 27.6	2 05.8	119 18.0	7 57.2	+1.22814	+1.28155	+7.23	+0.8593
27	0.6535	2.214	2.222	31 29.2	2 05.9	118 17.2	7 53.2	1.22888	1.28102	7.29	0.8630
28	0.6562	2.219	2.228	31 30.3	2 06.0	117 16.2	7 49.1	1.22999	1.28050	7.35	0.8666
29	0.6589	2.227	2.233	31 29.3	2 06.0	116 15.0	7 45.0	1.23140	1.27999	7.41	0.8700
30	0.6617	2.236	2.239	31 25.2	2 05.7	115 13.6	7 40.9	1.23289	1.27949	7.47	0.8732
31	0.6644	+ 2.247	+ 2.244	31 17.6	2 05.2	114 12.1	7 36.8	+1.23432	+1.27901	+7.52	+0.8763
Sept. 1	0.6672	2.257	2.250	31 07.3	2 04.5	113 10.4	7 32.7	1.23549	1.27855	7.57	0.8793
2	0.6699	2.266	2.256	30 55.0	2 03.7	112 08.6	7 28.6	1.23627	1.27810	7.62	0.8821
3	0.6726	2.272	2.261	30 42.4	2 02.8	111 06.6	7 24.5	1.23660	1.27766	7.67	0.8847
4	0.6754	2.277	2.266	30 31.0	2 02.1	110 04.5	7 20.3	1.23654	1.27724	7.71	0.8873
h 5	0.6781	+ 2.278	+ 2.271	30 22.2	2 01.5	109 02.2	7 16.2	+1.23621	+1.27684	+7.76	+0.8897
(23.0) 6	0.6808	2.278	2.277	30 16.7	2 01.1	107 59.8	7 12.0	1.23578	1.27646	7.80	0.8919
7	0.6836	2.277	2.282	30 14.8	2 01.0	106 57.2	7 07.8	1.23545	1.27610	7.84	0.8941
8	0.6863	2.276	2.287	30 16.0	2 01.1	105 54.5	7 03.7	1.23539	1.27575	7.87	0.8960
9	0.6891	2.277	2.292	30 19.0	2 01.3	104 51.7	6 59.5	1.23575	1.27543	7.90	0.8979
10	0.6918	+ 2.280	+ 2.297	30 22.4	2 01.5	103 48.7	6 55.2	+1.23661	+1.27512	+7.94	+0.8996
11	0.6945	2.286	2.302	30 24.2	2 01.6	102 45.6	6 51.0	1.23786	1.27484	7.97	0.9012
12	0.6973	2.295	2.307	30 23.4	2 01.6	101 42.4	6 46.8	1.23940	1.27457	7.99	0.9027
13	0.7000	2.305	2.312	30 19.4	2 01.3	100 39.1	6 42.6	1.24106	1.27433	8.02	0.9040
14	0.7027	2.316	2.317	30 11.8	2 00.8	99 35.7	6 38.4	1.24262	1.27411	8.04	0.9052
15	0.7055	+ 2.327	+ 2.321	30 01.5	2 00.1	98 32.2	6 34.1	+1.24393	+1.27391	+8.06	+0.9063
16	0.7082	2.337	2.326	29 49.7	1 59.3	97 28.5	6 29.9	1.24484	1.27374	8.08	0.9073
17	0.7110	2.344	2.331	29 38.0	1 58.5	96 24.8	6 25.7	1.24535	1.27358	8.09	0.9081
18	0.7137	2.348	2.336	29 28.0	1 57.9	95 21.1	6 21.4	1.24549	1.27345	8.11	0.9088
19	0.7164	2.351	2.341	29 20.9	1 57.4	94 17.2	6 17.1	1.24539	1.27335	8.12	0.9094
h 20	0.7192	+ 2.351	+ 2.346	29 17.4	1 57.2	93 13.3	6 12.9	+1.24523	+1.27326	+8.13	+0.9098
(0.0) 21	0.7219	2.351	2.350	29 17.6	1 57.2	92 09.3	6 08.6	1.24516	1.27320	8.13	0.9101
22	0.7246	2.351	2.355	29 20.7	1 57.4	91 05.3	6 04.4	1.24539	1.27317	8.13	0.9103
23	0.7274	2.352	2.359	29 25.4	1 57.7	90 01.2	6 00.1	1.24600	1.27315	8.14	0.9104
24	0.7301	2.356	2.364	29 30.1	1 58.0	88 57.1	5 55.8	1.24699	1.27317	8.14	0.9103
25	0.7329	+ 2.362	+ 2.369	29 33.3	1 58.2	87 53.0	5 51.5	+1.24832	+1.27320	+8.13	+0.9102
26	0.7356	2.370	2.374	29 33.8	1 58.3	86 48.8	5 47.3	1.24986	1.27326	8.13	0.9098
27	0.7383	2.379	2.379	29 31.0	1 58.1	85 44.7	5 43.0	1.25137	1.27334	8.12	0.9094
28	0.7411	2.389	2.384	29 25.3	1 57.7	84 40.5	5 38.7	1.25273	1.27345	8.11	0.9088
29	0.7438	2.398	2.388	29 17.2	1 57.1	83 36.4	5 34.4	1.25375	1.27358	8.09	0.9081
30	0.7466	+ 2.405	+ 2.393	29 08.2	1 56.5	82 32.2	5 30.2	+1.25437	+1.27373	+8.08	+0.9073
Oct. 1	0.7493	+ 2.409	+ 2.398	28 59.7	1 56.0	81 28.1	5 25.9	+1.25459	+1.27391	+8.06	+0.9063

(CONSTANTS OF STRUVE AND PETERS.)

FOR WASHINGTON MEAN MIDNIGHT.

Solar Day. (Sid. Hour.)		τ	f		f'		G		H		Log g .	Log h .	i	Log i .	
			In Time.		In Time.		In Arc.	In Time.	In Arc.	In Time.					
		y	s	s	°	h m	°	h m					"		
Oct.	1	0.7493	+ 2.409	+ 2.398	28 59.7	1 56.0	81 28.1	5 25.9	+1.25459	+1.27391	+ 8.06	+ 0.9063			
	2	0.7520	2.411	2.403	28 53.2	1 55.5	80 24.0	5 21.6	1.25450	1.27411	8.04	0.9052			
	3	0.7548	2.411	2.407	28 49.8	1 55.3	79 19.9	5 17.3	1.25427	1.27434	8.02	0.9040			
	4	0.7575	2.410	2.412	28 49.7	1 55.3	78 15.9	5 13.1	1.25406	1.27458	7.99	0.9027			
	h (1.0)	5	0.7602	2.409	2.417	28 52.9	1 55.5	77 11.9	5 08.8	1.25407	1.27485	7.96	0.9012		
	6	0.7630	+ 2.409	+ 2.422	28 58.2	1 55.9	76 07.9	5 04.5	+1.25446	+1.27514	+ 7.94	+ 0.8995			
	7	0.7657	2.411	2.427	29 04.4	1 56.3	75 04.0	5 00.3	1.25530	1.27545	7.90	0.8978			
	8	0.7685	2.416	2.432	29 09.8	1 56.7	74 00.2	4 56.0	1.25657	1.27578	7.87	0.8959			
	9	0.7712	2.424	2.437	29 13.0	1 56.9	72 56.4	4 51.7	1.25820	1.27613	7.83	0.8938			
	10	0.7739	2.434	2.442	29 13.0	1 56.9	71 52.7	4 47.5	1.26001	1.27651	7.79	0.8917			
	11	0.7767	+ 2.445	+ 2.448	29 09.5	1 56.6	70 49.0	4 43.3	+1.26180	+1.27690	+ 7.75	+ 0.8893			
	12	0.7794	2.457	2.453	29 03.1	1 56.2	69 45.4	4 39.0	1.26341	1.27731	7.71	0.8869			
	13	0.7821	2.468	2.459	28 54.8	1 55.7	68 41.9	4 34.8	1.26471	1.27774	7.66	0.8843			
	14	0.7849	2.476	2.464	28 45.8	1 55.1	67 38.5	4 30.6	1.26559	1.27819	7.61	0.8815			
	15	0.7876	2.482	2.470	28 37.9	1 54.5	66 35.2	4 26.3	1.26612	1.27865	7.56	0.8786			
	16	0.7904	+ 2.486	+ 2.475	28 32.3	1 54.2	65 32.0	4 22.1	+1.26639	+1.27913	+ 7.51	+ 0.8755			
	17	0.7931	2.488	2.481	28 30.0	1 54.0	64 28.9	4 17.9	1.26653	1.27963	7.45	0.8723			
	18	0.7958	2.489	2.486	28 31.0	1 54.1	63 25.9	4 13.7	1.26672	1.28014	7.40	0.8689			
	19	0.7986	2.489	2.492	28 35.2	1 54.3	62 23.0	4 09.5	1.26716	1.28067	7.34	0.8654			
	20	0.8013	2.491	2.498	28 41.2	1 54.7	61 20.2	4 05.3	1.26793	1.28121	7.27	0.8617			
	h (2.0)	21	0.8040	+ 2.496	+ 2.504	28 47.7	1 55.2	60 17.6	4 01.2	+1.26908	+1.28177	+ 7.21	+ 0.8578		
	22	0.8068	2.502	2.510	28 53.1	1 55.5	59 15.0	3 57.0	1.27060	1.28233	7.14	0.8538			
	23	0.8095	2.511	2.516	28 56.2	1 55.7	58 12.7	3 52.8	1.27233	1.28291	7.07	0.8496			
	24	0.8123	2.521	2.522	28 56.2	1 55.7	57 10.4	3 48.7	1.27415	1.28350	7.00	0.8452			
	25	0.8150	2.533	2.528	28 53.1	1 55.5	56 08.3	3 44.6	1.27586	1.28410	6.93	0.8406			
	26	0.8177	+ 2.543	+ 2.534	28 47.4	1 55.2	55 06.3	3 40.4	+1.27729	+1.28471	+ 6.85	+ 0.8359			
	27	0.8205	2.552	2.541	28 40.3	1 54.7	54 04.5	3 36.3	1.27838	1.28533	6.78	0.8309			
	28	0.8232	2.560	2.547	28 33.1	1 54.2	53 02.8	3 32.2	1.27909	1.28595	6.70	0.8258			
	29	0.8260	2.564	2.554	28 27.3	1 53.8	52 01.3	3 28.1	1.27946	1.28658	6.61	0.8205			
	30	0.8287	2.566	2.560	28 24.0	1 53.6	50 59.9	3 24.0	1.27961	1.28722	6.53	0.8150			
	Nov.	31	0.8314	+ 2.567	+ 2.567	28 23.7	1 53.6	49 58.7	3 19.9	+1.27975	+1.28786	+ 6.45	+ 0.8092		
1		0.8342	2.568	2.574	28 26.5	1 53.8	48 57.6	3 15.8	1.28005	1.28851	6.36	0.8033			
2		0.8369	2.569	2.581	28 31.7	1 54.1	47 56.7	3 11.8	1.28065	1.28916	6.27	0.7971			
3		0.8396	2.573	2.588	28 38.0	1 54.5	46 55.9	3 07.7	1.28165	1.28981	6.18	0.7907			
4		0.8424	2.579	2.595	28 44.0	1 54.9	45 55.3	3 03.7	1.28310	1.29047	6.08	0.7841			
h (3.0)		5	0.8451	+ 2.588	+ 2.602	28 48.2	1 55.2	44 54.9	+1.28488	+1.29112	+ 5.99	+ 0.7772			
6		0.8479	2.599	2.609	28 49.5	1 55.3	43 54.6	2 55.7	1.28693	1.29178	5.89	0.7701			
7		0.8506	2.613	2.617	28 47.5	1 55.2	42 54.4	2 51.6	1.28899	1.29243	5.79	0.7627			
8		0.8533	2.627	2.624	28 42.4	1 54.8	41 54.4	2 47.6	1.29096	1.29309	5.69	0.7551			
9		0.8561	2.640	2.632	28 34.9	1 54.3	40 54.5	2 43.6	1.29263	1.29374	5.59	0.7471			
10		0.8588	+ 2.651	+ 2.640	28 26.4	1 53.8	39 54.8	2 39.6	+1.29396	+1.29439	+ 5.48	+ 0.7389			
11		0.8615	2.661	2.648	28 18.3	1 53.2	38 55.2	2 35.7	1.29494	1.29503	5.37	0.7304			
12		0.8643	2.668	2.656	28 11.8	1 52.8	37 55.8	2 31.7	1.29563	1.29567	5.27	0.7216			
13		0.8670	2.672	2.664	28 08.0	1 52.5	36 56.6	2 27.7	1.29614	1.29631	5.16	0.7124			
14		0.8698	2.676	2.672	28 07.5	1 52.5	35 57.4	2 23.8	1.29664	1.29694	5.05	0.7030			
15		0.8725	+ 2.679	+ 2.680	28 09.7	1 52.6	34 58.4	2 19.9	+1.29732	+1.29756	+ 4.93	+ 0.6931			
16		0.8752	+ 2.683	+ 2.688	28 14.1	1 52.9	33 59.5	2 16.0	+1.29828	+1.29818	+ 4.82	+ 0.6829			

FOR WASHINGTON MEAN MIDNIGHT.

Solar Day. (Sid. Hour.)		τ	f		f'		G		H		Log g .	Log h .	i	Log i .	
			In Time.	In Time.	In Arc.	In Time.	In Arc.	In Time.							
		y	s	s	$^{\circ}$	h	m	$^{\circ}$	h	m					
Nov.	16	0.8752	+ 2.683	+ 2.688	28 14.1	1 52.9	33 59.5	2 16.0	+1.29828	+1.29818	+ 4.82	+ 0.6829			
	17	0.8780	2.689	2.697	28 19.3	1 53.3	33 00.8	2 12.0	1.29959	1.29879	4.70	0.6723			
	18	0.8807	2.697	2.705	28 23.9	1 53.6	32 02.2	2 08.1	1.30123	1.29939	4.58	0.6613			
	19	0.8834	2.708	2.714	28 26.5	1 53.8	31 03.8	2 04.2	1.30314	1.29998	4.47	0.6499			
	h	20	0.8862	2.721	2.722	28 26.3	1 53.8	30 05.5	2 00.3	1.30514	1.30055	4.35	0.6380		
	(4.0)	21	0.8889	+ 2.734	+ 2.731	28 23.1	1 53.5	29 07.3	1 56.5	+1.30710	+1.30112	+ 4.22	+ 0.6256		
		22	0.8917	2.748	2.740	28 17.2	1 53.1	28 09.2	1 52.6	1.30884	1.30168	4.10	0.6127		
		23	0.8944	2.760	2.749	28 09.5	1 52.6	27 11.3	1 48.7	1.31027	1.30222	3.97	0.5993		
		24	0.8971	2.771	2.758	28 01.2	1 52.1	26 13.5	1 44.9	1.31132	1.30275	3.85	0.5853		
		25	0.8999	2.778	2.767	27 53.7	1 51.6	25 15.8	1 41.0	1.31207	1.30327	3.72	0.5707		
26		0.9026	+ 2.784	+ 2.776	27 48.0	1 51.2	24 18.2	1 37.2	+1.31255	+1.30378	+ 3.59	+ 0.5553			
27		0.9054	2.788	2.786	27 45.1	1 51.0	23 20.8	1 33.4	1.31294	1.30427	3.46	0.5395			
28		0.9081	2.791	2.795	27 45.0	1 51.0	22 23.5	1 29.6	1.31341	1.30474	3.33	0.5228			
29		0.9108	2.794	2.805	27 47.3	1 51.2	21 26.2	1 25.7	1.31411	1.30520	3.20	0.5053			
30		0.9136	2.799	2.814	27 51.0	1 51.4	20 29.1	1 21.9	1.31514	1.30564	3.07	0.4869			
Dec.	1	0.9163	+ 2.807	+ 2.824	27 54.8	1 51.7	19 32.1	1 18.1	+1.31658	+1.30607	+ 2.93	+ 0.4676			
	2	0.9190	2.817	2.833	27 57.3	1 51.8	18 35.2	1 14.3	1.31836	1.30648	2.80	0.4471			
	3	0.9218	2.831	2.843	27 57.5	1 51.8	17 38.3	1 10.5	1.32039	1.30687	2.66	0.4256			
	4	0.9245	2.846	2.852	27 54.6	1 51.6	16 41.5	1 06.8	1.32251	1.30724	2.53	0.4027			
	h	5	0.9273	2.862	2.862	27 48.6	1 51.2	15 44.9	1 03.0	1.32456	1.30760	2.39	0.3785		
	(5.0)	6	0.9300	+ 2.878	+ 2.872	27 40.1	1 50.7	14 48.3	0 59.2	+1.32641	+1.30794	+ 2.25	+ 0.3526		
		7	0.9327	2.892	2.882	27 30.2	1 50.0	13 51.8	0 55.4	1.32794	1.30826	2.11	0.3250		
		8	0.9355	2.905	2.892	27 20.0	1 49.3	12 55.3	0 51.7	1.32911	1.30856	1.97	0.2953		
		9	0.9382	2.914	2.902	27 11.0	1 48.7	11 58.8	0 47.9	1.32999	1.30884	1.83	0.2633		
		10	0.9409	2.922	2.912	27 04.2	1 48.3	11 02.5	0 44.1	1.33065	1.30910	1.69	0.2285		
11		0.9437	+ 2.928	+ 2.923	27 00.1	1 48.0	10 06.2	0 40.4	+1.33125	+1.30934	+ 1.55	+ 0.1906			
12		0.9464	2.933	2.933	26 58.8	1 47.9	9 09.9	0 36.6	1.33193	1.30956	1.41	0.1489			
13		0.9492	2.938	2.943	26 59.8	1 48.0	8 13.6	0 32.9	1.33281	1.30975	1.27	0.1026			
14		0.9519	2.945	2.953	27 01.9	1 48.1	7 17.4	0 29.1	1.33400	1.30993	1.12	0.0506			
15		0.9546	2.955	2.963	27 03.9	1 48.3	6 21.2	0 25.4	1.33551	1.31009	0.98	9.9914			
	16	0.9574	+ 2.966	+ 2.973	27 04.5	1 48.3	5 25.1	0 21.7	+1.33726	+1.31023	+ 0.84	+ 9.9226			
	17	0.9601	2.980	2.984	27 02.8	1 48.2	4 29.0	0 17.9	1.33917	1.31034	0.69	9.8406			
	18	0.9628	2.995	2.994	26 58.3	1 47.9	3 32.8	0 14.2	1.34106	1.31043	0.55	9.7392			
	19	0.9656	3.011	3.004	26 51.1	1 47.4	2 36.7	0 10.4	1.34282	1.31050	0.40	9.6065			
	h	20	0.9683	3.025	3.015	26 41.8	1 46.8	1 40.7	0 06.7	1.34428	1.31055	0.26	9.4143		
	(6.0)	21	0.9711	+ 3.037	+ 3.025	26 31.6	1 46.1	0 44.6	0 03.0	+1.34541	+1.31058	+ 0.11	+ 9.0605		
		22	0.9738	3.047	3.035	26 21.6	1 45.4	359 48.5	23 59.2	1.34620	1.31059	- 0.03	- 8.4733		
		23	0.9765	3.055	3.045	26 13.1	1 44.9	358 52.4	23 55.5	1.34672	1.31057	0.17	9.2416		
		24	0.9793	3.060	3.055	26 06.7	1 44.4	357 56.3	23 51.7	1.34708	1.31054	0.32	9.5039		
		25	0.9820	3.064	3.066	26 03.1	1 44.2	357 00.1	23 48.0	1.34744	1.31048	0.46	9.6661		
26		0.9848	+ 3.068	+ 3.076	26 01.9	1 44.1	356 04.0	23 44.3	+1.34794	+1.31040	- 0.61	- 9.7839			
27		0.9875	3.073	3.087	26 02.5	1 44.2	355 07.9	23 40.5	1.34872	1.31030	0.75	9.8763			
28		0.9902	3.081	3.097	26 03.7	1 44.2	354 11.7	23 36.8	1.34985	1.31017	0.90	9.9524			
29		0.9930	3.091	3.107	26 04.2	1 44.3	353 15.5	23 33.0	1.35130	1.31003	1.04	0.0170			
30		0.9957	3.104	3.117	26 02.9	1 44.2	352 19.2	23 29.3	1.35301	1.30986	1.18	0.0730			
31	0.9984	+ 3.119	+ 3.128	25 59.0	1 43.9	351 22.9	23 25.5	+1.35488	+1.30967	- 1.33	- 0.1226				
32	1.0012	+ 3.135	+ 3.138	25 52.2	1 43.5	350 26.5	23 21.8	+1.35673	+1.30947	- 1.47	- 0.1669				

BESSELIAN AND INDEPENDENT STAR-NUMBERS, 1903. 303

(CONSTANTS OF STRUVE AND PETERS.)

FOR WASHINGTON SIDEREAL TWELVE HOURS.

Mean Solar Date.	Log A'.	Log B'.	Log C.	Log D.	f'	G'	H	Log g'.	Log h.	Log i.
Jan. 0.72	+ 9.1293	+ 0.9636	- 0.5065	+ 1.3041	+ 0.415	73 38	350 57	+ 0.9815	+ 1.3096	- 0.1438
10.70	9.2232	0.9604	0.8076	1.2835	0.515	69 50	341 31	0.9879	1.3065	0.4449
20.67	9.2959	0.9547	0.9744	1.2473	0.608	66 15	331 55	0.9931	1.3017	0.6117
30.64	9.3528	0.9472	1.0840	1.1928	0.694	62 58	322 06	0.9975	1.2957	0.7213
Feb. 9.61	9.3978	0.9391	1.1600	1.1148	0.769	60 02	312 01	1.0014	1.2891	0.7973
19.59	+ 9.4336	+ 0.9313	- 1.2128	+ 1.0030	+ 0.835	57 29	301 40	+ 1.0054	+ 1.2828	- 0.8500
Mar. 1.56	9.4626	0.9253	1.2475	0.8337	0.893	55 21	291 05	1.0100	1.2776	0.8848
11.53	9.4871	0.9218	1.2671	+ 0.5283	0.944	53 37	280 20	1.0160	1.2743	0.9044
21.50	9.5088	0.9215	1.2731	- 9.1746	0.993	52 13	269 33	1.0237	1.2732	0.9104
31.48	9.5295	0.9246	1.2661	0.5624	1.041	51 05	258 48	1.0336	1.2744	0.9034
Apr. 10.45	+ 9.5505	+ 0.9306	- 1.2458	- 0.8467	+ 1.092	50 07	248 15	+ 1.0456	+ 1.2779	- 0.8831
20.42	9.5726	0.9389	1.2113	1.0076	1.149	49 13	237 58	1.0597	1.2830	0.8486
30.39	9.5963	0.9486	1.1602	1.1147	1.214	48 18	228 00	1.0755	1.2891	0.7974
May 10.37	9.6217	0.9586	1.0882	1.1898	1.286	47 17	218 21	1.0924	1.2954	0.7255
20.34	9.6482	0.9678	0.9872	1.2429	1.368	46 09	209 02	1.1098	1.3012	0.6244
30.31	+ 9.6755	+ 0.9755	- 0.8391	- 1.2790	+ 1.456	44 51	199 58	+ 1.1271	+ 1.3059	- 0.4763
June 9.29	9.7028	0.9810	0.5929	1.3009	1.550	43 25	191 05	1.1438	1.3091	0.2301
19.26	9.7293	0.9840	- 0.9178	1.3102	1.648	41 52	182 19	1.1595	1.3105	- 0.5551
29.23	9.7544	0.9842	+ 0.3582	1.3074	1.746	40 15	173 35	1.1739	1.3101	+ 0.9954
July 9.20	9.7777	0.9817	0.7263	1.2923	1.842	38 35	164 48	1.1868	1.3078	0.3635
19.18	+ 9.7988	+ 0.9769	+ 0.9150	- 1.2642	+ 1.934	36 56	155 54	+ 1.1982	+ 1.3039	+ 0.5523
29.15	9.8175	0.9703	1.0374	1.2211	2.019	35 20	146 46	1.2081	1.2986	0.6747
Aug. 8.12	9.8337	0.9626	1.1232	1.1595	2.096	33 52	137 23	1.2166	1.2926	0.7605
18.09	9.8477	0.9547	1.1847	1.0729	2.165	32 32	127 42	1.2240	1.2864	0.8219
28.07	9.8597	0.9476	1.2278	0.9482	2.225	31 24	117 43	1.2307	1.2807	0.8651
Sept. 7.04	+ 9.8701	+ 0.9422	+ 1.2558	- 0.7528	+ 2.279	30 29	107 26	+ 1.2369	+ 1.2763	+ 0.8931
17.01	9.8795	0.9394	1.2705	- 0.3553	2.329	29 47	96 56	1.2432	1.2736	0.9077
26.99	9.8882	0.9395	1.2724	+ 0.0836	2.376	29 18	86 18	1.2499	1.2733	0.9097
Oct. 6.96	9.8971	0.9428	1.2615	0.6696	2.425	28 59	75 39	1.2574	1.2753	0.8988
16.93	9.9064	0.9488	1.2369	0.9040	2.478	28 48	65 05	1.2659	1.2793	0.8742
26.90	+ 9.9168	+ 0.9569	+ 1.1967	+ 1.0469	+ 2.537	28 41	54 41	+ 1.2758	+ 1.2850	+ 0.8339
Nov. 5.88	9.9283	0.9661	1.1373	1.1443	2.605	28 33	44 32	1.2868	1.2914	0.7746
15.85	9.9411	0.9753	1.0523	1.2131	2.683	28 21	34 38	1.2987	1.2978	0.6896
25.82	9.9550	0.9835	0.9286	1.2609	2.770	28 02	24 57	1.3113	1.3034	0.5659
Dec. 5.79	9.9696	0.9897	0.7338	1.2917	2.865	27 35	15 28	1.3242	1.3077	0.3710
15.77	+ 9.9846	+ 0.9933	+ 0.3368	+ 1.3077	+ 2.966	26 58	6 06	+ 1.3367	+ 1.3101	+ 0.9741
25.74	9.9994	0.9940	- 0.0602	1.3098	3.068	26 13	356 47	1.3487	1.3105	- 0.6974
35.71	+ 0.0136	+ 0.9915	- 0.6468	+ 1.2981	+ 3.170	25 22	347 25	+ 1.3597	+ 1.3087	- 0.2841

$$E = + 0.001^s$$

The above numbers give the same reductions from mean to apparent place as are employed in computing the apparent places of the fixed stars, given on pages 324-399, from the mean places, given on pages 304-311. In order to render exact interpolation possible through intervals of ten days, all short period terms have been omitted.

MEAN PLACES FOR 1903.0. (January 0.826^d, Washington.)

Name of Star.	Magni- tude.	Right Ascension.	Annual Variation.	Declination.	Annual Variation.
		h m s	s	° ' "	"
33 Piscium	4.7	0 00 22.254	+ 3.0716	- 6 15 00.68	+ 20.137
<i>α</i> Andromedæ	2.1	0 03 22.310	3.0938	+ 28 33 17.65	19.852
<i>β</i> Cassiopeiæ	2.4	0 03 59.875	3.1785	+ 58 36 53.21	19.863
22 Andromedæ	4.9	0 05 16.605	3.1058	+ 45 31 56.95	20.037
<i>γ</i> Pegasi (<i>Algenib</i>)	2.8	0 08 14.390	3.0852	+ 14 38 39.54	20.024
<i>σ</i> Andromedæ	4.4	0 13 15.482	+ 3.1246	+ 36 14 50.84	+ 19.966
<i>ι</i> Ceti	3.6	0 14 29.160	3.0572	- 9 21 41.82	19.977
44 Piscium	5.8	0 20 25.798	3.0739	+ 1 24 09.03	19.944
<i>β</i> Hydri	2.8	0 20 39.721	3.2176	- 77 48 02.01	20.283
12 Ceti	6.0	0 25 05.326	3.0620	- 4 29 35.56	19.926
<i>π</i> Andromedæ	4.4	0 31 41.868	+ 3.1948	+ 33 11 07.55	+ 19.856
<i>α</i> Cassiopeiæ (<i>var.</i>)	2.3	0 34 59.895	3.3802	+ 56 00 19.55	19.781
<i>β</i> Ceti	2.2	0 38 43.265	3.0131	- 18 31 08.01	19.803
21 Cassiopeiæ	5.7	0 39 13.943	3.8860	+ 74 27 28.57	19.727
<i>ο</i> Cassiopeiæ	4.7	0 39 19.006	3.3264	+ 47 45 12.93	19.746
<i>δ</i> Piscium	4.8	0 43 38.935	+ 3.1092	+ 7 03 26.11	+ 19.640
<i>γ</i> Cassiopeiæ	2.3	0 50 50.911	3.5893	+ 60 11 29.65	19.550
<i>μ</i> Andromedæ	4.0	0 51 21.986	3.3174	+ 37 58 23.86	19.575
43 Cephei (H.)	4.6	0 55 23.710	7.4355	+ 85 44 13.13	19.460
<i>ε</i> Piscium	4.3	0 57 54.479	3.1102	+ 7 22 04.76	19.436
<i>β</i> Andromedæ	2.2	1 04 17.872	+ 3.3473	+ 35 06 22.95	+ 19.146
<i>κ</i> Tucanæ	4.9	1 12 28.743	2.0417	- 69 23 29.15	19.142
<i>ζ</i> Piscium	5.1	1 12 47.697	3.0917	+ 3 06 13.54	19.018
<i>θ</i> ¹ Ceti	3.6	1 19 10.477	2.9976	- 8 41 01.59	18.647
<i>α</i> Ursæ Minoris (<i>Polaris</i>)	2.2	1 23 49.77*	25.8359	+ 88 47 22.84	18.724
38 Cassiopeiæ	5.9	1 24 00.099	+ 4.3979	+ 69 45 56.17	+ 18.643
<i>η</i> Piscium	3.7	1 26 17.464	3.2041	+ 14 50 45.29	18.640
<i>ο</i> Andromedæ	4.2	1 31 06.033	3.5056	+ 40 55 13.58	18.107
<i>π</i> Piscium	5.5	1 31 57.288	3.1750	+ 11 38 43.69	18.489
<i>α</i> Eridani (<i>Achernar</i>)	0.4	1 34 06.133	2.2379	- 57 43 46.28	18.340
<i>ν</i> Piscium	4.6	1 36 22.947	+ 3.1186	+ 4 59 48.90	+ 18.303
<i>ο</i> Piscium	4.4	1 40 16.214	3.1636	+ 8 40 10.81	18.203
<i>ζ</i> Ceti	3.6	1 46 40.344	2.9598	- 10 48 50.65	17.887
<i>β</i> Arietis	2.8	1 49 16.753	3.3061	+ 20 20 02.47	17.700
50 Cassiopeiæ	4.1	1 55 08.306	5.0381	+ 71 57 07.60	17.589
<i>γ</i> Andromedæ	2.2	1 57 56.494	+ 3.6665	+ 41 51 52.13	+ 17.400
<i>α</i> Arietis	2.1	2 01 42.178	3.3736	+ 23 00 14.26	17.142
<i>β</i> Trianguli	3.1	2 03 46.126	3.5578	+ 34 31 43.16	17.149
<i>ε</i> ¹ Ceti	4.5	2 07 51.441	3.1755	+ 8 23 30.46	16.991
<i>γ</i> Trianguli	4.3	2 11 32.693	3.5549	+ 33 23 55.56	16.782
67 Ceti	5.6	2 12 08.668	+ 2.9900	- 6 52 08.52	+ 16.695
<i>δ</i> Hydri	4.2	2 20 01.220	1.0549	- 69 06 02.55	16.440
<i>ι</i> Cassiopeiæ	4.6	2 21 03.961	4.8870	+ 66 57 59.62	16.378
<i>ε</i> ² Ceti	4.5	2 23 00.016	+ 3.1850	+ 8 01 31.79	16.262
<i>μ</i> Hydri	5.3	2 33 42.807	- 1.3808	- 79 31 57.55	15.667
<i>δ</i> Ceti	4.1	2 34 30.589	+ 3.0721	- 0 05 22.78	+ 15.665
<i>θ</i> Persei	4.2	2 37 34.230	4.0771	+ 48 49 06.46	15.405
<i>γ</i> Ceti	3.6	2 38 16.400	+ 3.1048	+ 2 49 38.01	+ 15.303

MEAN PLACES FOR 1903.0. (January 0.826^d, Washington.)

Name of Star.	Magni- tude.	Right Ascension.	Annual Variation.	Declination.	Annual Variation.
		h m s	s	° ' "	"
σ Arietis	5.5	2 46 08.126	+ 3.3062	+ 14 40 57.02	+ 14.972
47 Cephei (H.)	5.7	2 53 10.058	7.7926	+ 79 02 08.88	14.601
ε Arietis	4.6	2 53 39.793	3.4232	+ 20 57 09.29	14.552
α Ceti	2.6	2 57 12.465	3.1320	+ 3 42 33.86	14.269
β Persei (<i>Algol</i>) (<i>var.</i>)	2.3	3 01 51.241	3.8892	+ 40 34 56.01	14.058
48 Cephei (H.)	5.5	3 07 59.603	+ 7.4578	+ 77 22 43.57	+ 13.617
ζ Arietis	4.8	3 09 19.432	3.4415	+ 20 41 06.56	13.505
α Persei	1.9	3 17 23.603	+ 4.2632	+ 49 30 58.48	13.031
ι Hydri	5.7	3 18 21.918	- 1.5764	- 77 44 34.33	13.036
f Tauri	4.3	3 25 30.987	+ 3.3075	+ 12 36 16.28	12.514
ε Eridani	3.7	3 28 21.592	+ 2.8245	- 9 47 10.69	+ 12.343
δ Persei	3.1	3 36 00.894	4.2550	+ 47 28 39.73	11.746
γ Camelopardalis	4.6	3 40 06.597	6.2649	+ 71 02 01.21	11.434
η Tauri	3.1	3 41 42.993	3.5595	+ 23 48 19.59	11.325
ζ Persei	3.0	3 48 01.934	+ 3.7629	+ 31 35 45.07	10.902
γ Hydri	3.3	3 48 44.102	- 0.9780	- 74 32 10.79	+ 10.981
ε Persei	3.0	3 51 20.537	+ 4.0158	+ 39 43 47.69	10.645
γ Eridani	3.0	3 53 30.214	2.7979	- 13 47 03.19	10.401
A ¹ Tauri	4.6	3 58 57.544	3.5414	+ 21 49 01.78	10.044
c Persei	4.3	4 01 37.011	4.3427	+ 47 27 13.77	9.869
α ¹ Eridani	4.2	4 07 07.811	+ 2.9266	- 7 05 24.78	+ 9.564
γ Tauri	3.8	4 14 16.323	3.4102	+ 15 23 37.19	8.898
ε Tauri	3.6	4 22 57.084	+ 3.4993	+ 18 57 56.04	8.203
δ Mensæ	5.6	4 24 31.243	- 4.1811	- 80 26 28.92	8.184
m Persei	6.0	4 26 35.263	+ 4.2120	+ 42 51 25.25	7.950
α Tauri (<i>Aldebaran</i>)	1.0	4 30 21.206	+ 3.4387	+ 16 18 52.41	+ 7.454
τ Tauri	4.5	4 36 25.320	3.5972	+ 22 46 16.00	7.130
α Camelopardalis	4.4	4 44 24.210	5.9401	+ 66 10 42.10	6.498
i Tauri	5.2	4 45 41.911	3.5064	+ 18 40 30.18	6.351
ι Aurigæ	2.8	4 50 40.512	3.9022	+ 33 00 46.13	5.950
ζ Aurigæ	3.9	4 55 41.760	+ 4.1875	+ 40 56 04.60	+ 5.529
11 Orionis	4.7	4 59 01.536	3.4257	+ 15 16 09.49	5.235
β Eridani	2.9	5 03 04.862	2.9487	- 5 12 41.56	4.853
α Aurigæ (<i>Capella</i>)	0.1	5 09 31.315	4.4269	+ 45 53 58.97	3.951
β Orionis (<i>Rigel</i>)	0.3	5 09 52.542	2.8818	- 8 18 48.33	4.349
τ Orionis	3.8	5 12 53.779	+ 2.9120	- 6 56 56.27	+ 4.086
β Tauri	1.8	5 20 09.563	3.7904	+ 28 31 32.99	3.291
χ Aurigæ	5.0	5 26 24.821	3.9030	+ 32 07 14.08	2.914
Groombridge 966	6.4	5 26 44.989	8.0006	+ 74 58 48.75	2.915
δ Orionis (<i>var.</i>)	2.3	5 27 03.040	3.0638	- 0 22 14.43	2.870
α Leporis	2.7	5 28 27.119	+ 2.6453	- 17 53 29.38	+ 2.750
Groombridge 944	6.4	5 30 50.436	18.7061	+ 85 08 57.34	2.540
ε Orionis	1.8	5 31 17.468	3.0431	- 1 15 48.85	2.506
α Columbæ	2.7	5 36 08.196	2.1722	- 34 07 32.32	2.045
κ Orionis	2.3	5 43 09.360	2.8446	- 9 42 13.82	1.469
δ Draconis	4.4	5 44 35.888	+ 0.1012	- 65 46 18.82	+ 1.345
ν Aurigæ	4.1	5 44 45.999	4.1568	+ 39 07 13.45	1.345
α Orionis (<i>var.</i>)	0.9	5 49 55.215	+ 3.2475	+ 7 23 21.31	+ 0.891

MEAN PLACES FOR 1903.0. (January 0.826 ^d , Washington.)					
Name of Star.	Magni- tude.	Right Ascension.	Annual Variation.	Declination.	Annual Variation.
		h m s	s	° ' "	"
β Aurigæ	2.0	5 52 24.841	+ 4.4014	+ 44 56 16.64	+ 0.657
θ Aurigæ	2.9	5 53 06.404	4.0913	+ 37 12 21.97	+ 0.512
ν Orionis	4.5	6 02 02.042	3.4262	+ 14 46 49.12	- 0.203
22 Camelopardalis (H.)	4.7	6 08 09.559	6.6198	+ 69 21 15.99	0.827
η Geminorum	3.5	6 09 01.381	3.6227	+ 22 32 06.71	0.805
μ Geminorum	3.2	6 17 05.555	+ 3.6308	+ 22 33 49.33	- 1.608
φ ¹ Aurigæ	5.1	6 17 25.771	4.6266	+ 49 20 16.05	1.527
α Argûs (<i>Canopus</i>)	-0.8	6 21 47.919	1.3318	- 52 38 33.33	1.895
ν Geminorum	4.2	6 23 12.223	3.5631	+ 20 16 25.85	2.042
γ Geminorum	2.0	6 32 06.524	3.4672	+ 16 28 56.42	2.847
ε Geminorum	3.2	6 37 57.887	+ 3.6933	+ 25 13 39.00	- 3.324
φ ² Aurigæ	5.4	6 39 44.996	4.3310	+ 43 40 27.50	3.299
† α Canis Majoris (<i>Sirius</i>)	-1.4	6 40 52.425	2.6435	- 16 34 58.33	4.764
θ Geminorum	3.7	6 46 23.826	+ 3.9591	+ 34 04 42.70	4.081
ζ Mensæ	5.6	6 48 07.623	- 4.9235	- 80 42 41.49	4.097
ε Canis Majoris	1.5	6 54 48.814	+ 2.3573	- 28 50 23.32	- 4.746
51 Cephei (H.)	5.3	6 55 12.81*	29.5684	+ 87 12 06.26	4.819
ζ Geminorum (<i>var.</i>)	4.0	6 58 21.395	3.5613	+ 20 42 46.33	5.057
δ Canis Majoris	1.9	7 04 26.798	2.4380	- 26 14 20.20	5.560
63 Aurigæ	5.2	7 04 59.120	+ 4.1345	+ 39 28 44.81	5.611
γ ² Volantis (<i>var.</i>)	3.9	7 09 34.274	- 0.4973	- 70 20 28.96	- 5.915
25 Camelopardalis (H.)	5.3	7 10 42.364	+ 12.8893	+ 82 35 57.74	6.134
δ Geminorum	3.5	7 14 19.869	3.5874	+ 22 09 40.47	6.403
Piazzî vii, 67	5.7	7 20 47.602	6.2853	+ 68 39 51.26	6.966
β Canis Minoris	3.1	7 21 53.470	3.2560	+ 8 29 06.17	7.058
α ² Geminorum (<i>Castor</i>)	1.9	7 28 24.728	+ 3.8348	+ 32 06 06.32	- 7.625
† α Canis Min. (<i>Procyon</i>)	0.5	7 34 13.482	3.1427	+ 5 28 25.46	9.049
β Geminorum (<i>Pollux</i>)	1.2	7 39 22.899	3.6773	+ 28 15 38.80	8.479
φ Geminorum	5.0	7 47 33.753	3.6782	+ 27 01 01.92	9.094
26 Lyncis	5.8	7 47 39.172	4.3852	+ 47 48 59.05	9.079
Groombridge 1374	5.6	7 48 35.742	+ 7.2664	+ 74 10 38.99	- 9.184
ω ¹ Cancrî	6.0	7 55 03.791	3.6355	+ 25 39 31.01	9.651
3 Ursæ Majoris (H.)	5.5	8 03 09.990	6.0264	+ 68 45 36.20	10.257
15 Argûs (ρ)	3.1	8 03 24.772	2.5545	- 24 01 27.68	10.229
ζ ¹ Cancrî	4.8	8 06 39.011	3.4458	+ 17 56 26.28	10.651
β Cancrî	3.8	8 11 15.331	+ 3.2565	+ 9 29 05.14	- 10.916
30 Monocerotis	3.9	8 20 48.871	+ 3.0000	- 3 35 23.01	11.576
θ Chamæleontis	4.6	8 23 33.466	- 1.7273	- 77 10 18.13	11.735
η Cancrî	5.4	8 27 06.058	+ 3.4759	+ 20 46 15.31	12.057
σ Hydræ	4.5	8 33 41.304	3.1390	+ 3 40 56.13	12.471
γ Cancrî	4.9	8 37 40.468	+ 3.4786	+ 21 49 03.36	- 12.772
ε Hydræ	3.5	8 41 38.419	3.1806	+ 6 46 29.90	13.044
α ² Cancrî (<i>mean</i>)	5.5	8 48 19.724	3.6706	+ 30 56 49.28	13.457
ι Ursæ Majoris	3.3	8 52 34.209	4.1281	+ 48 25 22.06	13.957
α ² Ursæ Majoris	5.0	9 01 52.039	5.3381	+ 67 31 43.04	14.357
κ Cancrî	5.1	9 02 29.680	+ 3.2538	+ 11 03 31.58	- 14.341
θ Hydræ	4.0	9 09 19.125	3.1243	+ 2 43 25.57	15.051
β Argûs	2.0	9 12 08.259	+ 0.6743	- 69 19 03.40	- 14.812

† Periodic corrections given in the Appendix are still to be applied to the positions of Sirius and Procyon.

MEAN PLACES FOR 1903.0. (January 0.826^d, Washington.)

Name of Star.	Magni- tude.	Right Ascension.	Annual Variation.	Declination.	Annual Variation.
		h m s	s	° ' "	"
ε Argûs	2.6	9 14 29.532	+ 1.6043	- 58 52 04.91	- 15.036
α Lyncis	3.3	9 15 08.897	3.6667	+ 34 48 10.69	15.068
α Hydræ	2.1	9 22 49.268	2.9488	- 8 14 16.44	15.481
1 Draconis (H.)	4.5	9 23 17.970	8.8931	+ 81 45 20.24	15.568
d Ursæ Majoris	4.8	9 25 55.017	5.3803	+ 70 15 25.10	15.613
θ Ursæ Majoris	3.2	9 26 22.451	+ 4.0370	+ 52 07 10.99	- 16.253
10 Leonis Minoris	4.7	9 28 17.039	3.6887	+ 36 49 42.54	15.833
υ Leonis	3.8	9 35 58.494	+ 3.2061	+ 10 20 02.01	16.250
ζ Chamæleontis	5.2	9 36 45.255	- 1.6152	- 80 30 19.64	16.238
ε Leonis	3.2	9 40 20.827	+ 3.4131	+ 24 13 15.74	16.461
μ Leonis	4.0	9 47 14.902	+ 3.4194	+ 26 27 50.41	- 16.831
19 Leonis Minoris	5.2	9 51 44.783	3.6893	+ 41 31 04.07	17.011
π Leonis	5.0	9 55 05.303	3.1732	+ 8 30 35.28	17.169
α Leonis (<i>Regulus</i>) . . .	1.3	10 03 12.440	3.1994	+ 12 26 29.23	17.501
32 Ursæ Majoris	5.7	10 10 59.852	4.4069	+ 65 35 32.80	17.834
λ Ursæ Majoris	3.6	10 11 15.036	+ 3.6356	+ 43 23 56.37	- 17.870
γ ¹ Leonis	2.5	10 14 37.566	3.3134	+ 20 19 56.54	18.116
μ Hydræ	4.1	10 21 23.932	2.9000	- 16 20 27.32	18.299
β Leonis Minoris	4.3	10 22 16.649	3.4827	+ 37 12 15.71	18.364
α Antliæ	4.5	10 22 42.728	2.7412	- 30 34 26.33	18.290
9 Draconis (H.)	5.0	10 26 51.977	+ 5.2169	+ 76 12 46.25	- 18.423
ρ Leonis	4.0	10 27 42.291	3.1625	+ 9 48 21.35	18.446
41 Leonis Minoris	5.1	10 38 08.625	3.2690	+ 23 41 46.88	18.772
γ Argûs (<i>var.</i>)	1-6	10 41 17.758	2.3182	- 59 10 28.08	18.885
ι Leonis	5.3	10 44 09.591	3.1574	+ 11 03 30.69	18.992
δ* Chamæleontis	4.7	10 44 52.629	+ 0.6061	- 80 01 42.86	- 18.983
46 Leonis Minoris	3.9	10 47 53.366	3.3666	+ 34 44 16.68	19.345
Groombridge 1706	6.3	10 52 12.593	4.9253	+ 78 17 23.70	19.211
α Ursæ Majoris	2.0	10 57 44.876	+ 3.7382	+ 62 16 29.19	19.383
γ Octantis	6.1	11 00 00.03*	- 0.3155	- 84 04 19.47	19.369
ρ ³ Leonis	6.2	11 01 57.386	+ 3.0616	+ 2 28 56.18	- 19.487
ψ Ursæ Majoris	3.2	11 04 12.821	3.3895	+ 45 01 29.75	19.488
δ Leonis	2.7	11 08 57.081	3.1968	+ 21 03 18.79	19.692
υ Ursæ Majoris	3.7	11 13 14.510	3.2507	+ 33 37 25.29	19.605
δ Crateris	3.9	11 14 29.417	2.9966	- 14 15 12.71	19.458
τ Leonis	5.1	11 22 56.954	+ 3.0860	+ 3 23 25.96	- 19.802
λ Draconis	4.0	11 25 39.204	3.6094	+ 69 51 59.42	19.843
ξ Hydræ	3.8	11 28 13.769	2.9442	- 31 19 15.24	19.909
υ Leonis	4.4	11 31 58.940	3.0715	- 0 17 17.28	19.858
χ Ursæ Majoris	3.9	11 40 55.903	3.1843	+ 48 19 02.17	19.957
β Leonis	2.2	11 44 06.774	+ 3.0633	+ 15 06 51.58	- 20.117
γ Ursæ Majoris	2.4	11 48 43.943	3.1751	+ 54 14 02.74	20.018
π Virginis	4.6	11 55 54.140	3.0745	+ 7 09 18.77	20.075
υ Virginis	4.3	12 00 16.107	3.0574	+ 9 16 18.14	20.014
ε Corvi	3.2	12 05 08.080	3.0795	- 22 04 49.07	20.039
4 Draconis (H.)	5.1	12 07 39.699	+ 2.8620	+ 78 09 18.91	- 20.016
γ Corvi	2.7	12 10 48.969	3.0803	- 17 00 11.75	20.008
2 Canum Venaticorum . .	6.0	12 11 16.115	+ 3.0187	+ 41 12 00.19	- 20.068

MEAN PLACES FOR 1903.0. (January 0.8264, Washington.)

Name of Star.	Magni- tude.	Right Ascension.			Annual Variation.	Declination.			Annual Variation.
		h	m	s	s	°	'	"	"
β Chamæleontis	4.5	12	12	38.690	+ 3.4250	- 78	46	24.98	- 19.999
6 Ursæ Minoris (B.)	6.2	12	14	23.883	0.2710	+ 88	14	15.35	19.949
η Virginis	4.0	12	14	56.599	3.0690	- 0	07	39.91	20.031
α^1 Crucis	0.9	12	21	11.861	3.3038	- 62	33	41.47	20.000
δ^2 Corvi	3.1	12	24	50.657	3.0998	- 15	58	31.45	20.077
β Canum Venaticorum	4.4	12	29	08.335	+ 2.8587	+ 41	53	04.23	- 19.605
β Corvi	2.8	12	29	17.381	3.1435	- 22	51	37.25	19.944
κ Draconis	3.8	12	29	20.801	2.5839	+ 70	19	22.41	19.872
γ Virginis (<i>mean</i>)	2.9	12	36	44.736	3.0393	- 0	55	02.70	19.785
31 Comæ Berenices	5.1	12	46	58.464	2.9251	+ 28	04	06.54	19.651
32 ² Camelopardalis (H.)	5.2	12	48	24.415	+ 0.4145	+ 83	56	24.64	- 19.585
α Canum Venaticorum	3.2	12	51	29.498	2.8123	+ 38	50	31.80	19.494
δ Muscæ	3.8	12	55	35.340	4.0554	- 71	01	32.44	19.491
ϵ Virginis	3.1	12	57	20.903	2.9865	+ 11	28	49.55	19.407
θ Virginis	4.6	13	04	55.595	3.1023	- 5	01	16.37	19.287
20 Canum Venaticorum	4.7	13	13	11.700	+ 2.6971	+ 41	04	59.73	- 19.018
α Virginis (<i>Spica</i>)	1.1	13	20	04.899	3.1556	- 10	39	18.21	18.868
κ Octantis	5.4	13	25	08.63*	8.8845	- 85	17	20.87	18.702
ζ Virginis	3.6	13	29	44.976	3.0537	- 0	06	00.09	18.490
B. A. C. 4536	5.0	13	30	28.022	2.6828	+ 37	40	45.52	18.509
m Virginis	5.4	13	36	31.175	+ 3.1439	- 8	12	49.08	- 18.262
η Ursæ Majoris	1.9	13	43	43.183	2.3691	+ 49	47	50.13	18.051
η Bootis	2.8	13	50	03.973	2.8568	+ 18	53	01.76	18.142
θ Apodis (<i>var.</i>)	5.0	13	55	51.550	5.7040	- 76	19	43.27	17.568
β Centauri	0.7	13	56	58.411	4.1956	- 59	54	18.48	17.525
π Hydræ	3.6	14	00	50.728	+ 3.4066	- 26	12	54.85	- 17.470
α Draconis	3.7	14	01	45.815	1.6238	+ 64	50	21.70	17.272
d Bootis	4.8	14	05	58.627	2.7401	+ 25	33	03.49	17.171
κ Virginis	4.2	14	07	43.208	+ 3.1953	- 9	49	20.49	16.881
4 Ursæ Minoris	4.9	14	09	13.098	- 0.2995	+ 78	00	11.75	16.918
α Bootis (<i>Arcturus</i>)	0.2	14	11	14.205	+ 2.7352	+ 19	41	14.10	- 18.851
δ Octantis	5.0	14	11	19.085	9.1195	- 83	13	25.72	16.858
λ Bootis	4.3	14	12	41.838	2.2837	+ 46	32	00.88	16.628
λ Virginis	4.7	14	13	51.551	3.2291	- 12	55	29.13	16.703
θ Bootis	4.1	14	21	53.722	2.0434	+ 52	17	56.25	16.731
ρ Bootis	3.6	14	27	38.996	+ 2.5867	+ 30	47	49.31	- 15.915
5 Ursæ Minoris	4.5	14	27	43.339	- 0.1767	+ 76	07	38.19	16.003
α^2 Centauri	0.2	14	33	00.338	+ 4.0459	- 60	26	06.83	15.015
33 Bootis	5.3	14	35	13.689	2.2344	+ 44	49	22.64	15.665
α Apodis	4.1	14	35	47.146	7.2424	- 78	37	59.52	15.615
ϵ Bootis	2.6	14	40	45.051	+ 2.6203	+ 27	28	58.59	- 15.305
α^2 Libræ	2.9	14	45	30.626	+ 3.3119	- 15	38	19.86	15.119
β Ursæ Minoris	2.2	14	50	58.995	- 0.2166	+ 74	33	06.89	14.719
β Bootis	3.7	14	58	17.542	+ 2.2600	+ 40	46	22.70	14.320
γ Scorpii	3.4	14	58	23.459	3.5023	- 24	54	03.04	14.322
δ Bootis	3.5	15	11	35.536	+ 2.4192	+ 33	40	35.24	- 13.566
β Libræ	2.9	15	11	47.154	3.2234	- 9	01	30.75	13.452
μ^1 Bootis	4.5	15	20	49.567	+ 2.2662	+ 37	43	01.74	- 12.749

MEAN PLACES FOR 1903.0. (January 0.826^d, Washington.)

Name of Star.	Magni- tude.	Right Ascension.			Annual Variation.	Declination.			Annual Variation.
		^h	^m	^s	^s	[°]	[']	["]	["]
ρ Octantis	5.7	15	20	50.88*	+ 13.1668	- 84	08	33.36	- 12.750
γ^3 Ursæ Minoris	3.2	15	20	52.731	- 0.1245	+ 72	10	44.89	12.814
β Coronæ Borealis	3.9	15	23	49.791	+ 2.4736	+ 29	26	23.50	12.549
α Coronæ Borealis	2.3	15	30	34.841	2.5391	+ 27	02	27.20	12.263
α Serpentis	2.7	15	39	29.364	2.9523	+ 6	43	50.04	11.492
ϵ Serpentis	3.7	15	45	58.792	+ 2.9875	+ 4	46	10.44	- 10.996
ζ Ursæ Minoris	4.6	15	47	30.681	- 2.2275	+ 78	05	35.04	10.958
ϵ Coronæ Borealis	4.1	15	53	34.259	+ 2.4819	+ 27	09	30.63	10.573
δ Scorpii	2.6	15	54	35.750	3.5404	- 22	20	45.12	10.464
β^1 Scorpii	2.9	15	59	47.681	3.4818	- 19	32	24.50	10.067
φ Herculis	4.2	16	05	42.810	+ 1.8892	+ 45	11	20.60	- 9.551
δ^1 Apodis	4.9	16	05	50.008	8.8131	- 78	27	06.66	9.634
Groombridge 2320	5.5	16	06	03.360	0.1480	+ 68	03	56.10	9.509
δ Ophiuchi	2.8	16	09	15.681	3.1405	- 3	26	41.20	9.458
σ Coronæ Borealis	5.3	16	11	02.749	2.2454	+ 34	06	15.56	9.246
τ Herculis	3.9	16	16	49.515	+ 1.8025	+ 46	32	38.93	- 8.694
γ Apodis	4.0	16	18	33.414	+ 9.0641	- 78	40	47.25	8.668
η Ursæ Minoris	5.0	16	20	19.887	- 1.8041	+ 75	58	44.48	8.193
η Draconis	2.8	16	22	40.593	+ 0.8057	+ 61	44	01.17	8.201
α Scorpii (<i>Antares</i>)	1.2	16	23	27.495	3.6724	- 26	13	01.09	8.225
β Herculis	2.8	16	26	02.950	+ 2.5770	+ 21	42	02.36	- 8.014
Δ Draconis	5.0	16	28	10.169	- 0.1345	+ 68	58	40.82	7.783
ζ Ophiuchi	2.8	16	31	48.989	+ 3.2998	- 10	22	15.08	7.502
α Trianguli Australis	2.2	16	38	23.288	6.3129	- 68	50	59.78	7.038
η Herculis	3.7	16	39	34.206	2.0553	+ 39	06	23.27	6.985
κ Ophiuchi	3.4	16	53	04.583	+ 2.8377	+ 9	31	31.96	- 5.782
ϵ Ursæ Minoris	4.5	16	55	53.320	- 6.2960	+ 82	11	51.11	5.536
d Herculis	5.3	16	58	01.450	+ 2.2117	+ 33	42	30.27	5.364
η Ophiuchi	2.5	17	04	48.831	3.4366	- 15	36	18.07	4.689
α^1 Herculis (<i>var.</i>)	3.2	17	10	13.450	2.7341	+ 14	30	02.14	4.290
π Herculis	3.4	17	11	40.080	+ 2.0880	+ 36	55	05.61	- 4.197
θ Ophiuchi	3.3	17	16	03.081	3.6808	- 24	54	10.66	3.856
b Ophiuchi (<i>var.</i>)	4.4	17	20	26.701	3.6600	- 24	05	11.07	3.580
δ Aræ	3.8	17	22	20.374	5.4028	- 60	36	12.22	3.399
β Draconis	3.0	17	28	14.437	1.3536	+ 52	22	22.91	2.760
α Ophiuchi	2.2	17	30	25.887	+ 2.7834	+ 12	37	49.14	- 2.814
ϵ Herculis	4.0	17	36	43.619	+ 1.6931	+ 46	03	27.98	2.029
ω Draconis	4.9	17	37	31.106	- 0.3555	+ 68	48	10.10	1.645
μ Herculis	3.5	17	42	39.717	+ 2.3466	+ 27	46	37.78	2.264
ψ^1 Draconis	4.8	17	43	39.711	- 1.0766	+ 72	11	47.58	1.696
θ Herculis	3.9	17	52	55.580	+ 2.0567	+ 37	15	47.22	- 0.614
γ Draconis	2.5	17	54	21.224	1.3921	+ 51	30	00.41	0.518
γ^2 Sagittarii	2.9	17	59	34.556	+ 3.8517	- 30	25	31.82	- 0.235
δ Ursæ Minoris	4.4	18	03	34.25*	- 19.4517	+ 86	36	48.92	+ 0.360
σ Herculis	3.9	18	03	45.508	+ 2.3392	+ 28	44	55.99	0.331
μ Sagittarii	4.1	18	07	57.726	+ 3.5869	- 21	05	04.08	+ 0.695
η Serpentis	3.5	18	16	17.410	3.1026	- 2	55	27.14	0.733
λ Sagittarii	2.9	18	21	59.073	+ 3.7029	- 25	28	32.26	+ 1.721

MEAN PLACES FOR 1903.0. (January 0.826 ^d , Washington.)							
Name of Star.	Magni- tude.	Right Ascension.			Annual Variation.	Declination.	Annual Variation.
		^h	^m	^s	^s	[°] ['] ["]	["]
χ Draconis	3.8	18	22	48.446	- 1.0775	+ 72 41 26.90	+ 1.617
ι Aquilæ	4.0	18	29	55.715	+ 3.2646	- 8 18 43.65	2.295
ζ Pavonis	4.2	18	31	42.124	7.0253	- 71 30 41.59	2.600
α Lyræ (<i>Vega</i>) . . .	0.2	18	33	39.256	2.0313	+ 38 41 35.34	3.213
β Lyræ (<i>var.</i>) . . .	3.6	18	46	29.914	2.2146	+ 33 14 59.32	4.034
σ Sagittarii	2.3	18	49	15.029	+ 3.7207	- 26 25 02.97	+ 4.200
50 Draconis	5.6	18	49	30.425	- 1.9134	+ 75 19 10.51	4.348
γ Lyræ	3.3	18	55	18.890	+ 2.2433	+ 32 33 22.42	4.786
ζ Aquilæ	3.1	19	00	57.102	2.7568	+ 13 43 08.37	5.170
ι Lyræ	5.2	19	03	50.443	2.1411	+ 35 56 51.88	5.506
σ Octantis	5.6	19	04	48.72*	+ 101.2309	- 89 15 00.31	+ 5.592
δ Sagittarii	5.0	19	11	57.600	3.5117	- 19 07 32.80	6.175
δ Draconis	3.1	19	12	32.085	0.0251	+ 67 29 27.27	6.327
θ Lyræ	4.4	19	13	00.057	+ 2.0807	+ 37 57 38.93	6.284
τ Draconis	4.5	19	17	25.394	- 1.1285	+ 73 10 31.97	6.754
λ Ursæ Minoris . . .	6.5	19	19	04.91*	- 68.6194	+ 88 59 36.60	+ 6.789
δ Aquilæ	3.5	19	20	36.469	+ 3.0252	+ 2 55 15.98	6.987
β Cygni	3.1	19	26	48.562	2.4188	+ 27 45 20.44	7.403
κ Aquilæ	5.0	19	31	40.431	3.2294	- 7 14 35.87	7.808
β Sagittæ	4.5	19	36	41.529	2.6939	+ 17 15 03.85	8.177
γ Aquilæ	2.8	19	41	38.889	+ 2.8521	+ 10 22 35.73	+ 8.599
δ Cygni	2.9	19	41	56.633	- 1.8760	+ 44 53 37.62	8.670
α Aquilæ (<i>Altair</i>) . .	0.9	19	46	03.043	+ 2.9273	+ 8 36 42.64	9.327
ε Draconis	3.9	19	48	30.346	- 0.1823	+ 70 01 15.08	9.167
ε Pavonis	4.1	19	49	22.770	+ 7.0071	- 73 09 59.79	7.088
β Aquilæ	3.9	19	50	32.919	+ 2.9470	+ 6 09 51.26	+ 8.818
γ Sagittæ	3.6	19	54	26.589	2.6673	+ 19 13 42.38	9.624
ι Sagittarii	4.5	19	56	41.696	3.6947	- 27 58 47.10	9.785
τ Aquilæ	5.7	19	59	24.103	2.9310	+ 7 00 14.90	10.007
θ Aquilæ	3.3	20	06	18.025	3.0965	- 1 06 33.88	10.502
31 Cygni	3.9	20	10	34.670	+ 1.8901	+ 46 26 49.03	+ 10.819
κ Cephei (<i>pr.</i>) . . .	4.4	20	12	09.927	- 1.9451	+ 77 25 10.04	10.956
α ² Capricorni	3.7	20	12	40.414	+ 3.3315	- 12 50 44.59	10.975
α Pavonis	2.1	20	17	58.596	4.7715	- 57 02 46.07	11.261
γ Cygni	2.3	20	18	44.812	2.1524	+ 39 56 45.50	11.409
π Capricorni	5.1	20	21	46.198	+ 3.4377	- 18 31 47.39	+ 11.622
ε Delphini	4.0	20	28	34.747	+ 2.8665	+ 10 58 23.96	12.080
Groombridge 3241 . .	6.5	20	30	25.817	- 0.2305	+ 72 12 11.02	12.215
α Delphini	3.9	20	35	07.972	+ 2.7868	+ 15 34 11.28	12.573
β Pavonis	3.4	20	36	13.395	5.4572	- 66 33 07.28	12.628
α Cygni	1.4	20	38	07.494	+ 2.0445	+ 44 56 00.57	+ 12.757
φ Capricorni	4.3	20	40	21.247	3.5586	- 25 37 10.23	12.762
ε Cygni	2.6	20	42	17.186	2.4271	+ 33 36 24.12	13.354
μ Aquarii	4.8	20	47	25.372	+ 3.2387	- 9 20 51.24	13.338
12 Year Catalogue 1879 .	5.3	20	52	00.293	- 2.5900	+ 80 11 19.56	13.647
ν Cygni	4.1	20	53	33.394	+ 2.2351	+ 40 47 36.40	+ 13.753
61 ¹ Cygni	5.4	21	02	32.875	2.6847	+ 38 16 19.77	17.576
ζ Cygni	3.3	21	08	48.450	+ 2.5516	+ 29 49 43.71	+ 14.648

MEAN PLACES FOR 1903.0. (January 0.826^d, Washington.)

Name of Star.	Magni- tude.	Right Ascension.			Annual Variation.	Declination.			Annual Variation.
		h	m	s	"	°	'	"	"
τ Cygni	3.8	21	19	55.123	+ 2.3934	+ 37	37	52.14	+ 15.267
α Cephei	2.6	21	16	15.929	1.4358	+ 62	10	28.09	15.194
ι Pegasi	4.3	21	17	36.028	2.7738	+ 19	23	21.46	15.285
ζ Capricorni	3.8	21	21	07.857	3.4323	- 22	49	53.86	15.440
β Aquarii	2.9	21	26	27.199	3.1608	- 5	59	53.22	15.703
β Cephei (<i>pr.</i>)	3.4	21	27	24.703	+ 0.7902	+ 70	08	05.37	+ 15.771
ξ Aquarii	4.8	21	32	35.344	3.1967	- 8	17	21.80	16.018
74 Cygni	5.0	21	33	03.649	2.4025	+ 39	58	39.26	16.074
λ ¹ Octantis	5.4	21	36	05.318	9.6620	- 83	09	54.72	16.210
ε Pegasi	2.4	21	39	25.307	2.9462	+ 9	25	48.26	16.392
ι ¹ Cephei	4.8	21	40	30.158	+ 0.8922	+ 70	51	52.88	+ 16.539
π ² Cygni	4.5	21	43	12.542	2.2135	+ 48	51	38.15	16.580
μ Capricorni	5.2	21	48	00.511	3.2744	- 14	00	31.06	16.813
16 Pegasi	5.1	21	48	38.888	2.7278	+ 25	28	07.12	16.849
79 Draconis	6.6	21	51	39.150	0.7246	+ 73	14	35.95	17.000
α Aquarii	3.0	22	00	48.144	+ 3.0825	- 0	47	28.34	+ 17.394
α Gruis	1.9	22	02	07.332	3.7992	- 47	25	51.59	17.278
π ² Pegasi	4.3	22	05	40.725	2.6616	+ 32	42	07.49	17.585
θ Aquarii	4.4	22	11	42.949	3.1681	- 8	15	58.97	17.832
υ Octantis	6.2	22	13	13.34*	12.7401	- 86	27	39.71	17.984
γ Aquarii	4.0	22	16	38.795	+ 3.0996	- 1	52	34.22	+ 18.058
π Aquarii	4.6	22	20	19.396	3.0641	+ 0	53	06.01	18.179
σ Aquarii	4.9	22	25	30.905	3.1781	- 11	10	27.82	18.341
α Lacertæ	3.9	22	27	17.659	2.4660	+ 49	47	01.11	18.442
η Aquarii	4.2	22	30	22.337	3.0836	- 0	37	03.18	18.480
226 Cephei (B.)	5.7	22	30	34.300	+ 1.0690	+ 75	43	35.41	+ 18.540
10 Lacertæ	5.0	22	34	54.468	2.6872	+ 38	32	42.94	18.669
β Octantis	4.4	22	36	10.070	6.3965	- 81	53	24.77	18.722
ζ Pegasi	3.5	22	36	37.447	2.9911	+ 10	19	29.44	18.721
λ Pegasi	4.1	22	41	51.471	2.8859	+ 23	03	18.27	18.884
ι Cephei	3.6	22	46	13.532	+ 2.1253	+ 65	41	24.42	+ 18.891
λ Aquarii	3.8	22	47	33.275	3.1317	- 8	05	45.07	19.089
α Pis. Austr. (<i>Fomalhaut</i>)	1.3	22	52	17.541	3.3235	- 30	08	11.21	19.007
ο Andromedæ	3.8	22	57	27.365	2.7523	+ 41	48	16.47	19.295
α Pegasi (<i>Markab</i>)	2.5	22	59	55.698	2.9857	+ 14	40	59.79	19.323
φ Aquarii	4.3	23	09	17.946	+ 3.1077	- 6	34	19.24	+ 19.364
ο Cephei	5.1	23	14	38.375	2.4467	+ 67	34	50.59	19.673
τ Pegasi	4.6	23	15	50.073	2.9644	+ 23	12	33.50	19.664
θ Piscium	4.3	23	23	02.832	3.0417	+ 5	50	46.24	19.746
λ Andromedæ	3.8	23	32	48.854	2.9248	+ 45	55	57.38	19.486
ι Piscium	4.3	23	34	57.646	+ 3.0840	+ 5	06	01.86	+ 19.491
γ Cephei	3.5	23	35	21.769	2.4296	+ 77	05	27.56	20.088
ι ¹ Aquarii	5.2	23	39	10.287	3.1156	- 18	48	55.37	19.958
δ Sculptoris	4.6	23	43	52.441	3.1297	- 28	40	01.00	19.864
γ ¹ Octantis	5.2	23	46	25.585	3.6531	- 82	33	28.44	20.000
Groombridge 4163	6.6	23	50	06.210	+ 2.8689	+ 73	52	13.89	+ 20.023
ω Piscium	4.2	23	54	19.788	+ 3.0789	+ 6	19	34.86	+ 19.933

CIRCUMPOLAR STARS.

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Ursæ Min. (Polaris).		Mean Solar Date.	51 Cephei (Hæv.).		Mean Solar Date.	δ Ursæ Min.		Mean Solar Date.	λ Ursæ Min.		Mean Solar Date.	σ Octantis	
	Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion South.
Jan.	h m 1 24	+88 47	Jan.	h m 6 55	+87 11	Jan.	h m 18 03	+86 36	Jan.	h m 19 17	+88 59	Jan.	h m 19 03	-89 14
	s	"		s	"		s	"		s	"		s	"
0.3	34.40	42.0	0.5	41.59	54.8	0.9	8.92	55.1	1.0	50.83	50.0	1.0	6.77	53.1
1.3	33.32	42.1	1.5	41.72	55.2	1.9	8.94	54.7	2.0	50.40	49.6	2.0	6.98	52.8
2.3	32.20	42.2	2.5	41.82	55.5	2.9	8.99	54.3	3.0	50.07	49.2	3.0	7.16	52.5
3.3	31.10	42.3	3.5	41.90	55.8	3.9	9.05	54.0	4.0	49.82	48.8	4.0	7.31	52.2
4.3	30.05	42.4	4.5	41.94	56.2	4.9	9.12	53.6	5.0	49.62	48.5	5.0	7.45	51.8
5.3	29.04	42.5	5.5	41.98	56.5	5.9	9.20	53.3	6.0	49.45	48.2	5.9	7.61	51.5
6.3	28.10	42.5	6.5	42.03	56.8	6.9	9.26	53.0	7.0	49.26	47.9	6.9	7.84	51.1
7.3	27.20	42.6	7.5	42.07	57.1	7.9	9.31	52.7	8.0	49.06	47.6	7.9	8.19	50.7
8.3	26.32	42.6	8.5	42.13	57.4	8.9	9.36	52.4	8.9	48.82	47.3	8.9	8.65	50.4
9.3	25.45	42.7	9.5	42.19	57.7	9.9	9.38	52.1	9.9	48.53	47.0	9.9	9.22	50.0
10.2	24.55	42.8	10.5	42.27	58.0	10.9	9.40	51.8	10.9	48.21	46.7	10.9	9.90	49.6
11.2	23.62	42.9	11.5	42.36	58.3	11.9	9.44	51.5	11.9	47.89	46.4	11.9	10.65	49.3
12.2	22.63	43.0	12.5	42.44	58.6	12.9	9.49	51.2	12.9	47.60	46.0	12.9	11.44	48.9
13.2	21.57	43.1	13.5	42.50	58.9	13.9	9.55	50.8	13.9	47.37	45.7	13.9	12.21	48.6
14.2	20.47	43.1	14.5	42.53	59.3	14.9	9.64	50.4	14.9	47.20	45.3	14.9	12.92	48.3
15.2	19.33	43.2	15.5	42.55	59.6	15.9	9.76	50.1	15.9	47.13	45.0	15.9	13.58	48.0
16.2	18.18	43.2	16.5	42.52	60.0	16.9	9.90	49.7	16.9	47.15	44.6	16.9	14.18	47.7
17.2	17.06	43.2	17.5	42.46	60.3	17.9	10.06	49.4	17.9	47.25	44.2	17.9	14.75	47.4
18.2	15.97	43.2	18.5	42.39	60.7	18.9	10.23	49.1	18.9	47.40	43.9	18.9	15.30	47.1
19.2	14.95	43.1	19.5	42.30	61.0	19.9	10.39	48.8	19.9	47.58	43.6	19.9	15.89	46.8
20.2	13.97	43.1	20.4	42.20	61.3	20.9	10.55	48.5	20.9	47.76	43.3	20.9	16.54	46.4
21.2	13.03	43.1	21.4	42.12	61.5	21.9	10.70	48.2	21.9	47.91	43.0	21.9	17.30	46.0
22.2	12.13	43.0	22.4	42.03	61.8	22.9	10.84	48.0	22.9	48.03	42.7	22.9	18.16	45.7
23.2	11.23	43.0	23.4	41.97	62.1	23.9	10.98	47.7	23.9	48.12	42.4	23.9	19.13	45.3
24.2	10.30	43.0	24.4	41.91	62.4	24.9	11.12	47.4	24.9	48.18	42.1	24.9	20.18	45.0
25.2	9.33	43.0	25.4	41.86	62.7	25.9	11.26	47.1	25.9	48.24	41.8	25.9	21.28	44.7
26.2	8.31	43.0	26.4	41.80	63.0	26.9	11.42	46.8	26.9	48.35	41.5	26.9	22.40	44.4
27.2	7.24	43.0	27.4	41.72	63.3	27.9	11.60	46.5	27.9	48.51	41.1	27.9	23.50	44.1
28.2	6.13	42.9	28.4	41.62	63.7	28.9	11.80	46.1	28.9	48.75	40.8	28.9	24.54	43.8
29.2	4.99	42.9	29.4	41.48	64.0	29.9	12.02	45.8	29.9	49.06	40.4	29.9	25.54	43.6
30.2	3.87	42.8	30.4	41.31	64.4	30.9	12.26	45.5	30.9	49.47	40.1	30.9	26.49	43.3
31.2	2.78	42.7	31.4	41.11	64.7	31.9	12.53	45.2	31.9	49.93	39.7	31.9	27.42	43.0
32.2	1.73	42.6	32.4	40.90	65.0	32.9	12.79	45.0	32.9	50.43	39.4	32.9	28.35	42.7

CIRCUMPOLAR STARS.

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Ursæ Min. (Polaris).		Mean Solar Date.	51 Cephei (Hrv.).		Mean Solar Date.	δ Ursæ Min.		Mean Solar Date.	λ Ursæ Min.		Mean Solar Date.	σ Octantis.	
	Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion South.
Feb.	h m 1 23	° ' " +88 47	Feb.	h m 6 55	° ' " +87 12	Feb.	h m 18 03	° ' " +86 36	Feb.	h m 19 17	° ' " +88 59	Feb.	h m 19 03	° ' " -89 14
	s	"		s	"		s	"		s	"		s	"
1.2	61.73	42.6	1.4	40.90	5.0	1.9	12.79	45.0	1.9	50.43	39.4	1.9	28.35	42.7
2.2	60.76	42.4	2.4	40.71	5.2	2.9	13.04	44.7	2.9	50.92	39.1	2.9	29.33	42.4
3.2	59.85	42.3	3.4	40.50	5.5	3.9	13.28	44.5	3.9	51.42	38.8	3.9	30.39	42.1
4.2	59.00	42.2	4.4	40.30	5.8	4.9	13.50	44.3	4.9	51.87	38.5	4.9	31.57	41.7
5.2	58.16	42.1	5.4	40.13	6.0	5.9	13.72	44.1	5.9	52.27	38.3	5.9	32.86	41.4
6.2	57.33	42.0	6.4	39.96	6.3	6.9	13.93	43.8	6.9	52.63	38.0	6.9	34.26	41.1
7.2	56.46	41.9	7.4	39.79	6.5	7.9	14.13	43.6	7.9	52.98	37.7	7.9	35.72	40.8
8.2	55.57	41.8	8.4	39.65	6.8	8.9	14.34	43.3	8.9	53.34	37.4	8.9	37.22	40.5
9.2	54.62	41.7	9.4	39.48	7.1	9.9	14.57	43.1	9.9	53.74	37.1	9.9	38.72	40.3
10.2	53.61	41.6	10.4	39.29	7.4	10.9	14.82	42.8	10.9	54.21	36.8	10.9	40.19	40.0
11.2	52.59	41.5	11.4	39.07	7.7	11.9	15.10	42.5	11.9	54.75	36.5	11.9	41.58	39.8
12.2	51.55	41.4	12.4	38.83	8.0	12.9	15.39	42.3	12.9	55.39	36.2	12.9	42.91	39.6
13.2	50.54	41.2	13.4	38.55	8.3	13.9	15.71	42.0	13.9	56.11	35.9	13.9	44.18	39.3
14.2	49.58	41.0	14.4	38.26	8.6	14.9	16.04	41.8	14.9	56.88	35.6	14.9	45.41	39.1
15.1	48.68	40.8	15.4	37.95	8.8	15.9	16.38	41.6	15.9	57.69	35.3	15.9	46.66	38.8
16.1	47.85	40.6	16.4	37.62	9.1	16.8	16.69	41.5	16.9	58.51	35.0	16.9	47.94	38.5
17.1	47.08	40.4	17.4	37.31	9.3	17.8	17.00	41.3	17.9	59.30	34.8	17.9	49.30	38.3
18.1	46.34	40.2	18.4	37.02	9.5	18.8	17.30	41.2	18.9	60.06	34.6	18.9	50.77	38.0
19.1	45.63	40.0	19.4	36.73	9.7	19.8	17.59	41.0	19.9	60.78	34.4	19.9	52.32	37.7
20.1	44.90	39.8	20.4	36.47	9.9	20.8	17.87	40.9	20.9	61.47	34.1	20.9	53.98	37.5
21.1	44.16	39.6	21.4	36.20	10.1	21.8	18.16	40.7	21.9	62.16	33.9	21.9	55.67	37.2
22.1	43.38	39.5	22.4	35.94	10.3	22.8	18.45	40.5	22.9	62.85	33.6	22.9	57.39	37.0
23.1	42.55	39.3	23.4	35.65	10.6	23.8	18.75	40.3	23.9	63.59	33.4	23.9	59.09	36.8
24.1	41.69	39.1	24.3	35.35	10.8	24.8	19.08	40.1	24.9	64.38	33.1	24.9	60.73	36.6
25.1	40.79	38.9	25.3	35.02	11.0	25.8	19.43	39.9	25.9	65.26	32.8	25.9	62.32	36.5
26.1	39.91	38.7	26.3	34.66	11.3	26.8	19.79	39.7	26.9	66.21	32.6	26.9	63.84	36.3
27.1	39.07	38.4	27.3	34.29	11.5	27.8	20.17	39.6	27.9	67.21	32.3	27.8	65.33	36.1
28.1	38.29	38.2	28.3	33.88	11.7	28.8	20.55	39.5	28.9	68.26	32.1	28.8	66.79	35.9
29.1	37.57	37.9	29.3	33.48	11.9	29.8	20.94	39.4	29.9	69.32	31.9	29.8	68.28	35.7

CIRCUMPOLAR STARS.

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	<i>α</i> Ursæ Min. (<i>Polaris</i>).		Mean Solar Date.	51 Cephei (Hev.).		Mean Solar Date.	<i>δ</i> Ursæ Min.		Mean Solar Date.	<i>λ</i> Ursæ Min.		Mean Solar Date.	<i>σ</i> Octantis.	
	Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion South.
Mar.	h m 1 23	° +88 47	Mar.	h m 6 55	° +87 12	Mar.	h m 18 03	° +86 36	Mar.	h m 19 18	° +88 59	Mar.	h m 19 04	° -89 14
	s	"		s	"		s	"		s	"		s	"
1.1	37.57	37.9	1.3	33.48	11.9	1.8	20.94	39.4	1.9	9.32	31.9	1.8	8.28	35.7
2.1	36.94	37.6	2.3	33.09	12.1	2.8	21.31	39.3	2.9	10.38	31.7	2.8	9.83	35.5
3.1	36.37	37.3	3.3	32.70	12.2	3.8	21.65	39.2	3.9	11.38	31.5	3.8	11.47	35.2
4.1	35.85	37.1	4.3	32.32	12.3	4.8	21.98	39.1	4.9	12.33	31.4	4.8	13.22	35.0
5.1	35.34	36.8	5.3	31.98	12.5	5.8	22.29	39.0	5.8	13.23	31.2	5.8	15.05	34.8
6.1	34.82	36.6	6.3	31.65	12.6	6.8	22.60	38.9	6.8	14.09	31.0	6.8	16.96	34.6
7.1	34.28	36.4	7.3	31.32	12.8	7.8	22.91	38.8	7.8	14.94	30.9	7.8	18.92	34.4
8.1	33.70	36.2	8.3	30.99	12.9	8.8	23.23	38.7	8.8	15.82	30.7	8.8	20.88	34.3
9.1	33.08	35.9	9.3	30.65	13.1	9.8	23.57	38.6	9.8	16.74	30.5	9.8	22.81	34.2
10.1	32.43	35.7	10.3	30.29	13.3	10.8	23.92	38.5	10.8	17.73	30.3	10.8	24.65	34.0
11.1	31.76	35.4	11.3	29.91	13.4	11.8	24.30	38.4	11.8	18.78	30.1	11.8	26.42	33.9
12.1	31.11	35.1	12.3	29.49	13.6	12.8	24.69	38.3	12.8	19.93	29.9	12.8	28.13	33.8
13.1	30.52	34.8	13.3	29.06	13.7	13.8	25.08	38.3	13.8	21.14	29.7	13.8	29.80	33.6
14.1	29.98	34.5	14.3	28.61	13.9	14.8	25.48	38.2	14.8	22.37	29.6	14.8	31.42	33.5
15.1	29.51	34.2	15.3	28.15	14.0	15.8	25.87	38.2	15.8	23.61	29.4	15.8	33.07	33.4
16.1	29.13	33.9	16.3	27.69	14.0	16.8	26.26	38.2	16.8	24.83	29.3	16.8	34.76	33.2
17.1	28.80	33.6	17.3	27.25	14.1	17.8	26.63	38.2	17.8	26.00	29.2	17.8	36.54	33.0
18.1	28.51	33.3	18.3	26.83	14.2	18.8	26.98	38.3	18.8	27.13	29.1	18.8	38.40	32.9
19.1	28.23	33.0	19.3	26.44	14.2	19.8	27.32	38.3	19.8	28.20	29.1	19.8	40.36	32.7
20.1	27.92	32.7	20.3	26.05	14.3	20.8	27.65	38.3	20.8	29.24	29.0	20.8	42.35	32.6
21.1	27.60	32.4	21.3	25.67	14.3	21.8	27.99	38.3	21.8	30.28	28.9	21.8	44.37	32.5
22.0	27.24	32.2	22.3	25.29	14.4	22.7	28.34	38.2	22.8	31.36	28.8	22.8	46.38	32.4
23.0	26.84	31.9	23.3	24.90	14.5	23.7	28.71	38.2	23.8	32.46	28.6	23.8	48.33	32.3
24.0	26.42	31.6	24.3	24.48	14.6	24.7	29.09	38.2	24.8	33.63	28.5	24.8	50.21	32.3
25.0	26.01	31.3	25.3	24.03	14.7	25.7	29.48	38.2	25.8	34.86	28.4	25.8	52.02	32.2
26.0	25.61	31.0	26.3	23.58	14.8	26.7	29.88	38.2	26.8	36.15	28.3	26.8	53.78	32.2
27.0	25.28	30.6	27.3	23.10	14.8	27.7	30.28	38.2	27.8	37.48	28.2	27.8	55.48	32.1
28.0	25.03	30.3	28.3	22.61	14.9	28.7	30.69	38.3	28.8	38.82	28.1	28.8	57.18	32.0
29.0	24.84	29.9	29.3	22.14	14.9	29.7	31.08	38.3	29.8	40.13	28.1	29.8	58.91	31.9
30.0	24.73	29.6	30.3	21.68	14.9	30.7	31.45	38.4	30.8	41.40	28.1	30.8	60.72	31.8
31.0	24.69	29.3	31.3	21.23	14.9	31.7	31.80	38.5	31.8	42.62	28.1	31.8	62.62	31.7
32.0	24.66	28.9	32.2	20.81	14.8	32.7	32.13	38.6	32.8	43.77	28.1	32.8	64.60	31.6

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

α Ursæ Min. (Polaris).			51 Cephei (Hrv.)			δ Ursæ Min.			λ Ursæ Min.			σ Octantis.		
Mean Solar Date.	Right Ascension.	Declina- tion North.	Mean Solar Date.	Right Ascension.	Declina- tion North.	Mean Solar Date.	Right Ascension.	Declina- tion North.	Mean Solar Date.	Right Ascension.	Declina- tion North.	Mean Solar Date.	Right Ascension.	Declina- tion South.
Apr.	h m 1 23	+88 47	Apr.	h m 6 55	+87 12	Apr.	h m 18 03	+86 36	Apr.	h m 19 18	+88 59	Apr.	h m 19 05	-89 14
1.0	24.66	28.9	1.2	20.81	14.8	1.7	32.13	38.6	1.8	43.77	28.1	1.8	4.60	31.6
2.0	24.65	28.7	2.2	20.40	14.8	2.7	32.44	38.7	2.8	44.86	28.1	2.8	6.67	31.6
3.0	24.62	28.4	3.2	20.01	14.8	3.7	32.74	38.8	3.8	45.91	28.1	3.8	8.77	31.5
4.0	24.57	28.1	4.2	19.65	14.8	4.7	33.05	38.9	4.8	46.96	28.0	4.8	10.89	31.5
5.0	24.46	27.8	5.2	19.27	14.8	5.7	33.37	39.0	5.8	48.05	28.0	5.7	12.98	31.5
6.0	24.34	27.5	6.2	18.87	14.8	6.7	33.70	39.0	6.8	49.18	28.0	6.7	15.00	31.5
7.0	24.21	27.2	7.2	18.46	14.8	7.7	34.05	39.1	7.8	50.36	27.9	7.7	16.92	31.5
8.0	24.07	26.9	8.2	18.03	14.8	8.7	34.42	39.2	8.8	51.61	27.9	8.7	18.77	31.5
9.0	23.98	26.6	9.2	17.56	14.8	9.7	34.80	39.3	9.8	52.92	27.9	9.7	20.54	31.5
10.0	23.94	26.2	10.2	17.09	14.8	10.7	35.18	39.4	10.8	54.25	27.9	10.7	22.26	31.5
11.0	23.96	25.9	11.2	16.63	14.7	11.7	35.55	39.5	11.7	55.60	27.9	11.7	23.96	31.5
12.0	24.07	25.5	12.2	16.16	14.6	12.7	35.90	39.7	12.7	56.92	28.0	12.7	25.70	31.4
13.0	24.25	25.2	13.2	15.71	14.5	13.7	36.24	39.9	13.7	58.19	28.0	13.7	27.48	31.4
13.9	24.46	24.9	14.2	15.28	14.4	14.7	36.57	40.1	14.7	59.40	28.1	14.7	29.35	31.4
14.9	24.71	24.6	15.2	14.88	14.3	15.7	36.87	40.2	15.7	60.58	28.2	15.7	31.30	31.4
15.9	24.94	24.3	16.2	14.50	14.2	16.7	37.16	40.4	16.7	61.66	28.3	16.7	33.30	31.4
16.9	25.17	24.0	17.2	14.13	14.1	17.7	37.44	40.5	17.7	62.72	28.4	17.7	35.32	31.4
17.9	25.35	23.7	18.2	13.76	14.0	18.7	37.71	40.7	18.7	63.79	28.4	18.7	37.33	31.4
18.9	25.48	23.4	19.2	13.39	14.0	19.7	38.01	40.8	19.7	64.88	28.5	19.7	39.30	31.5
19.9	25.60	23.1	20.2	13.00	13.9	20.7	38.33	41.0	20.7	66.02	28.5	20.7	41.19	31.5
20.9	25.69	22.8	21.2	12.61	13.8	21.7	38.65	41.1	21.7	67.20	28.6	21.7	43.00	31.6
21.9	25.82	22.5	22.2	12.19	13.7	22.7	38.99	41.3	22.7	68.44	28.6	22.7	44.72	31.7
22.9	25.98	22.2	23.2	11.76	13.6	23.7	39.32	41.5	23.7	69.70	28.7	23.7	46.39	31.8
23.9	26.22	21.8	24.2	11.31	13.5	24.7	39.65	41.7	24.7	70.99	28.8	24.7	48.01	31.8
24.9	26.53	21.5	25.2	10.87	13.4	25.7	39.96	41.9	25.7	72.25	28.9	25.7	49.65	31.9
25.9	26.92	21.2	26.2	10.46	13.2	26.7	40.26	42.1	26.7	73.46	29.0	26.7	51.33	31.9
26.9	27.35	20.9	27.2	10.06	13.1	27.7	40.53	42.4	27.7	74.61	29.2	27.7	53.09	31.9
27.9	27.85	20.6	28.2	9.69	12.9	28.7	40.77	42.6	28.7	75.68	29.4	28.7	54.93	32.0
28.9	28.36	20.3	29.2	9.36	12.7	29.6	41.00	42.9	29.7	76.67	29.5	29.7	56.85	32.0
29.9	28.85	20.0	30.2	9.04	12.5	30.6	41.22	43.1	30.7	77.61	29.7	30.7	58.81	32.1
30.9	29.32	19.8	31.2	8.73	12.4	31.6	41.43	43.3	31.7	78.52	29.8	31.7	60.80	32.2
31.9	29.76	19.5												

CIRCUMPOLAR STARS.

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Ursæ Min. (Polaris).		Mean Solar Date.	51 Cephei (Hæv.).		Mean Solar Date.	δ Ursæ Min.		Mean Solar Date.	λ Ursæ Min.		Mean Solar Date.	σ Octantis	
	Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion South.
May	h m 1 23	° +88 47	May	h m 6 55	° +87 12	May	h m 18 03	° +86 36	May	h m 19 19	° +88 59	May	h m 19 06	° -89 14
	s	"		s	"		s	"		s	"		s	"
1.9	29.76	19.5	1.2	8.73	12.4	1.6	41.43	43.3	1.7	18.52	29.8	1.7	0.80	32.2
2.9	30.15	19.3	2.2	8.43	12.2	2.6	41.65	43.5	2.7	19.44	30.0	2.7	2.75	32.3
3.9	30.51	19.0	3.2	8.13	12.0	3.6	41.87	43.7	3.7	20.38	30.1	3.7	4.64	32.4
4.9	30.86	18.8	4.2	7.82	11.9	4.6	42.11	43.9	4.7	21.36	30.2	4.7	6.44	32.6
5.9	31.23	18.5	5.2	7.48	11.8	5.6	42.36	44.1	5.7	22.40	30.3	5.7	8.13	32.7
6.9	31.67	18.2	6.2	7.13	11.6	6.6	42.62	44.3	6.7	23.50	30.5	6.7	9.73	32.8
7.9	32.16	17.9	7.1	6.76	11.5	7.6	42.88	44.6	7.7	24.62	30.6	7.7	11.26	33.0
8.9	32.73	17.6	8.1	6.39	11.3	8.6	43.14	44.8	8.7	25.74	30.8	8.7	12.75	33.1
9.9	33.37	17.3	9.1	6.02	11.1	9.6	43.39	45.1	9.7	26.84	31.0	9.6	14.25	33.2
10.9	34.06	17.1	10.1	5.67	10.8	10.6	43.61	45.4	10.7	27.90	31.2	10.6	15.78	33.3
11.9	34.76	16.8	11.1	5.35	10.6	11.6	43.82	45.7	11.7	28.90	31.4	11.6	17.38	33.4
12.9	35.49	16.6	12.1	5.06	10.3	12.6	44.00	46.0	12.7	29.81	31.6	12.6	19.03	33.5
13.9	36.18	16.4	13.1	4.79	10.1	13.6	44.16	46.3	13.6	30.66	31.9	13.6	20.76	33.6
14.9	36.84	16.2	14.1	4.53	9.9	14.6	44.31	46.6	14.6	31.45	32.1	14.6	22.50	33.7
15.9	37.45	16.0	15.1	4.29	9.6	15.6	44.47	46.9	15.6	32.23	32.3	15.6	24.24	33.9
16.9	38.03	15.7	16.1	4.06	9.4	16.6	44.63	47.1	16.6	33.02	32.5	16.6	25.94	34.1
17.9	38.60	15.5	17.1	3.81	9.2	17.6	44.79	47.4	17.6	33.82	32.7	17.6	27.56	34.3
18.9	39.15	15.3	18.1	3.55	9.0	18.6	44.97	47.6	18.6	34.66	32.9	18.6	29.07	34.5
19.9	39.74	15.1	19.1	3.27	8.8	19.6	45.16	47.9	19.6	35.56	33.1	19.6	30.51	34.7
20.9	40.38	14.8	20.1	2.99	8.6	20.6	45.35	48.1	20.6	36.48	33.3	20.6	31.86	34.9
21.9	41.09	14.6	21.1	2.70	8.4	21.6	45.54	48.4	21.6	37.41	33.5	21.6	33.15	35.1
22.9	41.88	14.3	22.1	2.40	8.1	22.6	45.72	48.7	22.6	38.35	33.7	22.6	34.43	35.2
23.9	42.72	14.1	23.1	2.13	7.9	23.6	45.87	49.1	23.6	39.21	34.0	23.6	35.72	35.4
24.9	43.61	13.9	24.1	1.89	7.6	24.6	46.00	49.4	24.6	40.03	34.3	24.6	37.08	35.5
25.9	44.52	13.7	25.1	1.66	7.3	25.6	46.11	49.8	25.6	40.76	34.6	25.6	38.51	35.7
26.9	45.41	13.5	26.1	1.46	7.0	26.6	46.19	50.1	26.6	41.40	34.8	26.6	39.99	35.8
27.9	46.29	13.4	27.1	1.31	6.7	27.6	46.25	50.4	27.6	41.97	35.1	27.6	41.54	36.0
28.9	47.13	13.3	28.1	1.16	6.4	28.6	46.31	50.7	28.6	42.49	35.4	28.6	43.11	36.2
29.9	47.91	13.1	29.1	1.03	6.2	29.6	46.37	51.0	29.6	42.99	35.6	29.6	44.66	36.4
30.9	48.67	13.0	30.1	0.89	5.9	30.6	46.43	51.3	30.6	43.51	35.9	30.6	46.14	36.7
31.9	49.40	12.8	31.1	0.74	5.6	31.6	46.50	51.6	31.6	44.05	36.1	31.6	47.53	36.9
32.9	50.12	12.7	32.1	0.59	5.4	32.6	46.59	51.8	32.6	44.63	36.4	32.6	48.81	37.2

CIRCUMPOLAR STARS.

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Ursæ Min. (Polaris).		Mean Solar Date.	γ Cephei (HEV.).		Mean Solar Date.	δ Ursæ Min.		Mean Solar Date.	λ Ursæ Min.		Mean Solar Date.	σ Octantis.	
	Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion South.
June	h m l 23	° +88 47	June	h m 6 54	° +87 11	June	h m 18 03	° +86 36	June	h m 19 19	° +88 59	June	h m 19 06	° -89 14
	s	"		s	"		s	"		s	"		s	"
1.9	50.12	12.7	1.1	60.59	65.4	1.6	46.59	51.8	1.6	44.63	36.4	1.6	48.81	37.2
2.9	50.88	12.5	2.1	60.42	65.2	2.6	46.69	52.1	2.6	45.26	36.6	2.6	49.99	37.4
3.8	51.71	12.3	3.1	60.24	64.9	3.5	46.79	52.4	3.6	45.93	36.8	3.6	51.09	37.7
4.8	52.60	12.2	4.1	60.04	64.6	4.5	46.88	52.8	4.6	46.62	37.1	4.6	52.12	37.9
5.8	53.54	12.0	5.1	59.86	64.3	5.5	46.96	53.1	5.6	47.27	37.4	5.6	53.12	38.1
6.8	54.53	11.8	6.1	59.69	64.0	6.5	47.03	53.5	6.6	47.90	37.7	6.6	54.15	38.3
7.8	55.57	11.7	7.1	59.54	63.7	7.5	47.07	53.8	7.6	48.44	38.1	7.6	55.22	38.5
8.8	56.61	11.6	8.1	59.41	63.4	8.5	47.09	54.2	8.6	48.91	38.4	8.6	56.34	38.7
9.8	57.62	11.5	9.1	59.31	63.0	9.5	47.09	54.5	9.6	49.30	38.7	9.6	57.51	38.9
10.8	58.59	11.4	10.1	59.25	62.7	10.5	47.08	54.9	10.6	49.63	39.0	10.6	58.72	39.2
11.8	59.52	11.3	11.1	59.20	62.4	11.5	47.05	55.2	11.6	49.91	39.3	11.6	59.93	39.4
12.8	60.41	11.2	12.1	59.16	62.1	12.5	47.04	55.5	12.6	50.20	39.6	12.6	61.10	39.7
13.8	61.26	11.2	13.0	59.11	61.8	13.5	47.03	55.8	13.6	50.50	39.9	13.6	62.20	40.0
14.8	62.08	11.1	14.0	59.06	61.6	14.5	47.03	56.0	14.6	50.83	40.2	14.6	63.18	40.3
15.8	62.93	11.0	15.0	58.99	61.3	15.5	47.05	56.3	15.6	51.20	40.4	15.6	64.07	40.6
16.8	63.80	10.9	16.0	58.90	61.0	16.5	47.08	56.6	16.6	51.61	40.7	16.6	64.86	40.8
17.8	64.73	10.7	17.0	58.81	60.8	17.5	47.09	56.9	17.6	52.03	41.0	17.5	65.59	41.1
18.8	65.74	10.6	18.0	58.72	60.5	18.5	47.10	57.3	18.6	52.44	41.3	18.5	66.28	41.4
19.8	66.81	10.5	19.0	58.64	60.1	19.5	47.09	57.6	19.6	52.80	41.6	19.5	66.94	41.6
20.8	67.91	10.5	20.0	58.58	59.8	20.5	47.06	58.0	20.6	53.11	42.0	20.5	67.64	41.9
21.8	69.04	10.4	21.0	58.55	59.4	21.5	47.00	58.3	21.6	53.34	42.3	21.5	68.42	42.1
22.8	70.17	10.4	22.0	58.55	59.1	22.5	46.92	58.7	22.6	53.48	42.7	22.5	69.25	42.3
23.8	71.26	10.4	23.0	58.58	58.8	23.5	46.82	59.0	23.6	53.53	43.0	23.5	70.14	42.6
24.8	72.32	10.4	24.0	58.63	58.4	24.5	46.70	59.4	24.6	53.52	43.4	24.5	71.06	42.9
25.8	73.32	10.4	25.0	58.71	58.1	25.5	46.58	59.7	25.5	53.48	43.7	25.5	71.97	43.2
26.8	74.26	10.4	26.0	58.78	57.8	26.5	46.47	60.0	26.5	53.44	44.0	26.5	72.82	43.5
27.8	75.18	10.4	27.0	58.85	57.5	27.5	46.36	60.2	27.5	53.42	44.3	27.5	73.60	43.8
28.8	76.09	10.4	28.0	58.90	57.2	28.5	46.26	60.5	28.5	53.43	44.6	28.5	74.26	44.1
29.8	77.00	10.4	29.0	58.94	57.0	29.5	46.18	60.8	29.5	53.49	44.9	29.5	74.80	44.4
30.8	77.97	10.4	30.0	58.97	56.7	30.5	46.10	61.1	30.5	53.59	45.2	30.5	75.25	44.7
31.8	78.98	10.3	31.0	58.99	56.4	31.5	46.03	61.4	31.5	53.71	45.5	31.5	75.60	45.0

CIRCUMPOLAR STARS.

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Ursæ Min. (Polaris).		Mean Solar Date.	51 Cephei (Hev.).		Mean Solar Date.	δ Ursæ Min.		Mean Solar Date.	λ Ursæ Min.		Mean Solar Date.	σ Octantis	
	Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion South.
July	h m 1 24	° +88 47	July	h m 6 54	° +87 11	July	h m 18 03	° +86 37	July	h m 19 19	° +88 59	July	h m 19 07	° -89 14
	s	"		s	"		s	"		s	"		s	"
1.8	18.98	10.3	1.0	58.99	56.4	1.5	46.03	1.4	1.5	53.71	45.5	1.5	15.60	45.0
2.8	20.05	10.3	2.0	59.01	56.1	2.5	45.95	1.7	2.5	53.81	45.8	2.5	15.92	45.3
3.8	21.17	10.3	3.0	59.04	55.7	3.5	45.85	2.1	3.5	53.88	46.2	3.5	16.22	45.6
4.8	22.33	10.3	4.0	59.09	55.4	4.5	45.72	2.4	4.5	53.89	46.5	4.5	16.58	45.8
5.8	23.49	10.3	5.0	59.16	55.0	5.5	45.57	2.8	5.5	53.83	46.9	5.5	16.97	46.1
6.8	24.64	10.4	5.9	59.27	54.7	6.5	45.41	3.1	6.5	53.68	47.3	6.5	17.39	46.4
7.8	25.74	10.4	6.9	59.41	54.3	7.5	45.23	3.4	7.5	53.46	47.6	7.5	17.88	46.6
8.8	26.80	10.5	7.9	59.56	54.0	8.5	45.04	3.7	8.5	53.20	48.0	8.5	18.36	46.9
9.8	27.80	10.5	8.9	59.72	53.7	9.5	44.85	4.0	9.5	52.90	48.3	9.5	18.82	47.2
10.7	28.74	10.6	9.9	59.88	53.4	10.5	44.66	4.3	10.5	52.61	48.6	10.5	19.21	47.6
11.7	29.66	10.7	10.9	60.03	53.1	11.5	44.49	4.5	11.5	52.35	48.9	11.5	19.50	47.9
12.7	30.56	10.7	11.9	60.17	52.8	12.4	44.33	4.8	12.5	52.14	49.2	12.5	19.68	48.3
13.7	31.50	10.8	12.9	60.30	52.6	13.4	44.18	5.0	13.5	51.96	49.5	13.5	19.75	48.6
14.7	32.46	10.8	13.9	60.42	52.3	14.4	44.04	5.3	14.5	51.80	49.8	14.5	19.74	48.9
15.7	33.47	10.9	14.9	60.53	52.0	15.4	43.88	5.6	15.5	51.64	50.1	15.5	19.66	49.2
16.7	34.55	10.9	15.9	60.64	51.7	16.4	43.72	5.9	16.5	51.47	50.4	16.5	19.56	49.5
17.7	35.67	11.0	16.9	60.78	51.3	17.4	43.53	6.2	17.5	51.24	50.8	17.5	19.48	49.8
18.7	36.82	11.1	17.9	60.95	51.0	18.4	43.32	6.6	18.5	50.93	51.1	18.5	19.44	50.1
19.7	37.99	11.2	18.9	61.13	50.6	19.4	43.08	6.9	19.5	50.54	51.5	19.5	19.47	50.3
20.7	39.11	11.3	19.9	61.35	50.3	20.4	42.82	7.2	20.5	50.06	51.9	20.5	19.56	50.6
21.7	40.20	11.4	20.9	61.60	50.0	21.4	42.55	7.5	21.5	49.51	52.2	21.5	19.68	50.9
22.7	41.23	11.6	21.9	61.86	49.7	22.4	42.27	7.7	22.5	48.91	52.6	22.5	19.81	51.2
23.7	42.20	11.8	22.9	62.14	49.4	23.4	41.99	8.0	23.5	48.30	52.9	23.5	19.90	51.5
24.7	43.13	11.9	23.9	62.41	49.1	24.4	41.72	8.2	24.5	47.70	53.2	24.5	19.93	51.9
25.7	44.01	12.1	24.9	62.67	48.9	25.4	41.46	8.4	25.5	47.14	53.4	25.4	19.84	52.2
26.7	44.91	12.2	25.9	62.93	48.6	26.4	41.22	8.7	26.5	46.62	53.7	26.4	19.62	52.5
27.7	45.82	12.3	26.9	63.14	48.4	27.4	40.99	8.9	27.5	46.14	54.0	27.4	19.30	52.9
28.7	46.78	12.4	27.9	63.37	48.1	28.4	40.76	9.1	28.5	45.69	54.3	28.4	18.91	53.2
29.7	47.78	12.5	28.9	63.58	47.8	29.4	40.53	9.4	29.5	45.24	54.6	29.4	18.44	53.5
30.7	48.84	12.7	29.9	63.81	47.5	30.4	40.28	9.6	30.5	44.75	54.9	30.4	17.95	53.8
31.7	49.92	12.8	30.9	64.04	47.2	31.4	40.02	9.9	31.4	44.23	55.2	31.4	17.47	54.0
32.7	51.03	12.9	31.9	64.29	46.9	32.4	39.74	10.2	32.4	43.64	55.6	32.4	17.04	54.3

CIRCUMPOLAR STARS.

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Ursæ Min. (Polaris).		Mean Solar Date.	51 Cephei (Hæv.).		Mean Solar Date.	δ Ursæ Min.		Mean Solar Date.	λ Ursæ Min.		Mean Solar Date.	σ Octantis	
	Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion South.
Aug.	h m 1 24	° ' 47	Aug.	h m 6 55	° ' 11	Aug.	h m 18 03	° ' 37	Aug.	h m 19 19	° ' 59	Aug.	h m 19 06	° ' 14
	"	"		"	"		"	"		"	"		"	"
1.7	51.03	12.9	1.9	4.57	46.6	1.4	39.74	10.2	1.4	43.64	55.6	1.4	77.04	54.3
2.7	52.11	13.1	2.9	4.89	46.3	2.4	39.44	10.5	2.4	42.98	55.9	2.4	76.64	54.6
3.7	53.15	13.3	3.9	5.22	46.0	3.4	39.11	10.7	3.4	42.23	56.3	3.4	76.31	54.8
4.7	54.15	13.5	4.9	5.56	45.7	4.4	38.77	11.0	4.4	41.43	56.6	4.4	75.99	55.1
5.7	55.08	13.7	5.9	5.91	45.4	5.4	38.43	11.2	5.4	40.60	56.9	5.4	75.66	55.4
6.7	55.95	14.0	6.9	6.25	45.2	6.4	38.10	11.4	6.4	39.78	57.2	6.4	75.28	55.7
7.7	56.77	14.2	7.9	6.58	45.0	7.4	37.79	11.6	7.4	38.96	57.4	7.4	74.81	56.0
8.7	57.58	14.4	8.9	6.88	44.7	8.4	37.48	11.7	8.4	38.19	57.7	8.4	74.23	56.3
9.7	58.38	14.6	9.9	7.18	44.5	9.4	37.19	11.9	9.4	37.47	58.0	9.4	73.54	56.6
10.7	59.22	14.7	10.9	7.46	44.3	10.4	36.90	12.1	10.4	36.78	58.2	10.4	72.76	56.9
11.7	60.09	14.9	11.9	7.75	44.0	11.4	36.62	12.3	11.4	36.11	58.5	11.4	71.89	57.2
12.7	61.02	15.1	12.9	8.05	43.8	12.4	36.33	12.5	12.4	35.42	58.8	12.4	71.00	57.5
13.7	62.00	15.3	13.9	8.36	43.5	13.4	36.02	12.7	13.4	34.70	59.1	13.4	70.12	57.7
14.7	63.01	15.5	14.9	8.72	43.2	14.4	35.69	13.0	14.4	33.90	59.4	14.4	69.27	58.0
15.6	64.01	15.7	15.9	9.09	42.9	15.4	35.34	13.2	15.4	33.04	59.7	15.4	68.49	58.2
16.6	65.02	16.0	16.9	9.49	42.6	16.3	34.96	13.4	16.4	32.09	60.0	16.4	67.77	58.4
17.6	65.96	16.2	17.9	9.92	42.4	17.3	34.57	13.6	17.4	31.06	60.3	17.4	67.10	58.6
18.6	66.87	16.5	18.9	10.37	42.2	18.3	34.17	13.8	18.4	29.97	60.6	18.4	66.43	58.9
19.6	67.69	16.8	19.9	10.81	42.0	19.3	33.78	13.9	19.4	28.86	60.8	19.4	65.77	59.2
20.6	68.45	17.1	20.9	11.23	41.8	20.3	33.39	14.1	20.4	27.77	61.1	20.4	65.05	59.4
21.6	69.19	17.4	21.9	11.65	41.6	21.3	33.01	14.2	21.4	26.70	61.3	21.4	64.23	59.7
22.6	69.89	17.6	22.9	12.05	41.4	22.3	32.65	14.3	22.4	25.67	61.5	22.4	63.31	60.0
23.6	70.60	17.9	23.9	12.42	41.2	23.3	32.30	14.5	23.4	24.70	61.7	23.4	62.28	60.3
24.6	71.33	18.1	24.8	12.79	41.0	24.3	31.97	14.6	24.4	23.77	62.0	24.4	61.16	60.6
25.6	72.12	18.3	25.8	13.15	40.8	25.3	31.63	14.7	25.4	22.86	62.2	25.4	59.97	60.8
26.6	72.95	18.6	26.8	13.53	40.6	26.3	31.28	14.9	26.4	21.95	62.4	26.4	58.74	61.0
27.6	73.82	18.8	27.8	13.93	40.4	27.3	30.92	15.1	27.4	20.99	62.7	27.4	57.51	61.2
28.6	74.71	19.1	28.8	14.33	40.1	28.3	30.55	15.2	28.4	19.97	63.0	28.4	56.33	61.4
29.6	75.60	19.4	29.8	14.78	39.9	29.3	30.15	15.4	29.4	18.89	63.2	29.3	55.21	61.6
30.6	76.44	19.7	30.8	15.23	39.7	30.3	29.74	15.6	30.4	17.74	63.5	30.3	54.14	61.8
31.6	77.25	20.0	31.8	15.72	39.5	31.3	29.31	15.7	31.4	16.53	63.8	31.3	53.10	62.0
32.6	77.97	20.3	32.8	16.20	39.3	32.3	28.89	15.8	32.4	15.27	64.0	32.3	52.07	62.2

CIRCUMPOLAR STARS.

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

α Ursæ Min. (Polaris).			51 Cephei (Hev.).			δ Ursæ Min.			λ Ursæ Min.			σ Octantis.		
Mean Solar Date.	Right Ascen- sion.	Declina- tion North.	Mean Solar Date.	Right Ascen- sion.	Declina- tion North.	Mean Solar Date.	Right Ascen- sion.	Declina- tion North.	Mean Solar Date.	Right Ascen- sion.	Declina- tion North.	Mean Solar Date.	Right Ascen- sion.	Declina- tion South.
Sept.	h m 1 25	° +88 47	Sept.	h m 6 55	° +87 11	Sept.	h m 18 03	° +86 37	Sept.	h m 19 18	° +89 00	Sept.	h m 19 06	° -89 15
	s	"		s	"		s	"		s	"		s	"
1.6	17.97	20.3	1.8	16.20	39.3	1.3	28.89	15.8	1.4	75.27	4.0	1.3	52.07	2.2
2.6	18.61	20.6	2.8	16.67	39.1	2.3	28.46	15.9	2.4	74.01	4.2	2.3	51.01	2.4
3.6	19.22	21.0	3.8	17.13	39.0	3.3	28.05	16.0	3.4	72.77	4.4	3.3	49.89	2.6
4.6	19.77	21.3	4.8	17.59	38.8	4.3	27.66	16.0	4.4	71.58	4.6	4.3	48.68	2.8
5.6	20.32	21.6	5.8	18.02	38.7	5.3	27.28	16.1	5.3	70.42	4.7	5.3	47.36	3.1
6.6	20.89	21.8	6.8	18.43	38.6	6.3	26.92	16.2	6.3	69.32	4.9	6.3	45.94	3.3
7.6	21.48	22.1	7.8	18.84	38.4	7.3	26.56	16.2	7.3	68.23	5.1	7.3	44.46	3.5
8.6	22.12	22.4	8.8	19.26	38.2	8.3	26.19	16.3	8.3	67.16	5.3	8.3	42.94	3.6
9.6	22.81	22.7	9.8	19.68	38.1	9.3	25.81	16.4	9.3	66.07	5.5	9.3	41.41	3.8
10.6	23.52	23.0	10.8	20.13	37.9	10.3	25.42	16.5	10.3	64.92	5.7	10.3	39.92	3.9
11.6	24.26	23.3	11.8	20.62	37.7	11.3	25.01	16.6	11.3	63.71	5.9	11.3	38.49	4.0
12.6	25.00	23.6	12.8	21.13	37.5	12.3	24.58	16.7	12.3	62.42	6.1	12.3	37.13	4.2
13.6	25.66	24.0	13.8	21.65	37.4	13.3	24.12	16.8	13.3	61.06	6.3	13.3	35.85	4.3
14.6	26.29	24.4	14.8	22.19	37.2	14.3	23.66	16.9	14.3	59.64	6.5	14.3	34.60	4.4
15.6	26.86	24.7	15.8	22.74	37.1	15.3	23.19	16.9	15.3	58.18	6.7	15.3	33.38	4.6
16.6	27.34	25.1	16.8	23.28	37.0	16.3	22.73	16.9	16.3	56.74	6.8	16.3	32.12	4.7
17.6	27.77	25.5	17.8	23.81	36.9	17.3	22.29	16.9	17.3	55.32	7.0	17.3	30.80	4.9
18.6	28.16	25.8	18.8	24.29	36.9	18.3	21.86	17.0	18.3	53.94	7.1	18.3	29.39	5.0
19.6	28.56	26.2	19.8	24.77	36.8	19.3	21.46	17.0	19.3	52.62	7.2	19.3	27.89	5.2
20.6	28.97	26.5	20.8	25.24	36.7	20.3	21.07	17.0	20.3	51.36	7.3	20.3	26.28	5.3
21.5	29.42	26.8	21.8	25.69	36.6	21.3	20.68	17.0	21.3	50.14	7.4	21.3	24.61	5.4
22.5	29.91	27.1	22.8	26.14	36.5	22.2	20.30	17.0	22.3	48.92	7.6	22.3	22.90	5.5
23.5	30.44	27.4	23.8	26.62	36.4	23.2	19.90	17.0	23.3	47.67	7.7	23.3	21.19	5.6
24.5	30.98	27.8	24.8	27.11	36.2	24.2	19.49	17.1	24.3	46.39	7.9	24.3	19.53	5.7
25.5	31.53	28.1	25.8	27.62	36.1	25.2	19.06	17.1	25.3	45.06	8.0	25.3	17.95	5.7
26.5	32.04	28.5	26.8	28.16	36.0	26.2	18.61	17.1	26.3	43.65	8.2	26.3	16.41	5.8
27.5	32.52	28.9	27.8	28.70	35.9	27.2	18.15	17.1	27.3	42.19	8.3	27.3	14.95	5.8
28.5	32.92	29.3	28.8	29.26	35.8	28.2	17.69	17.1	28.3	40.68	8.4	28.3	13.50	5.8
29.5	33.25	29.7	29.8	29.81	35.8	29.2	17.24	17.1	29.3	39.17	8.5	29.3	12.08	5.9
30.5	33.51	30.0	30.8	30.34	35.8	30.2	16.80	17.1	30.3	37.68	8.6	30.3	10.61	6.0
31.5	33.73	30.4	31.7	30.86	35.7	31.2	16.37	17.0	31.3	36.21	8.7	31.3	9.07	6.1

CIRCUMPOLAR STARS.

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Ursæ Min. (Polaris).		Mean Solar Date.	γ Cephei (Hev.).		Mean Solar Date.	δ Ursæ Min.		Mean Solar Date.	λ Ursæ Min.		Mean Solar Date.	σ Octantis.	
	Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion South.
Oct.	h m 1 25	° +88 47	Oct.	h m 6 55	° +87 11	Oct.	h m 18 03	° +86 37	Oct.	h m 19 17	° +89 00	Oct.	h m 19 05	° -89 15
	s	"		s	"		s	"		s	"		s	"
1.5	33.73	30.4	1.7	30.86	35.7	1.2	16.37	17.0	1.3	96.21	8.7	1.3	69.07	6.1
2.5	33.93	30.8	2.7	31.36	35.7	2.2	15.96	16.9	2.3	94.80	8.8	2.3	67.44	6.1
3.5	34.11	31.1	3.7	31.85	35.7	3.2	15.57	16.9	3.3	93.45	8.8	3.3	65.73	6.2
4.5	34.33	31.5	4.7	32.31	35.7	4.2	15.18	16.8	4.3	92.15	8.9	4.3	63.96	6.3
5.5	34.57	31.8	5.7	32.78	35.6	5.2	14.81	16.7	5.3	90.87	8.9	5.2	62.13	6.3
6.5	34.88	32.1	6.7	33.25	35.6	6.2	14.43	16.7	6.3	89.60	9.0	6.2	60.30	6.3
7.5	35.22	32.5	7.7	33.74	35.5	7.2	14.03	16.7	7.3	88.29	9.1	7.2	58.49	6.3
8.5	35.57	32.8	8.7	34.26	35.5	8.2	13.62	16.6	8.3	86.93	9.2	8.2	56.77	6.2
9.5	35.92	33.2	9.7	34.79	35.4	9.2	13.19	16.6	9.3	85.50	9.3	9.2	55.13	6.2
10.5	36.23	33.6	10.7	35.35	35.4	10.2	12.74	16.6	10.3	84.00	9.4	10.2	53.57	6.2
11.5	36.49	34.0	11.7	35.92	35.3	11.2	12.28	16.5	11.3	82.44	9.4	11.2	52.11	6.1
12.5	36.69	34.4	12.7	36.51	35.3	12.2	11.83	16.4	12.3	80.84	9.5	12.2	50.69	6.1
13.5	36.80	34.9	13.7	37.08	35.4	13.2	11.38	16.3	13.2	79.24	9.5	13.2	49.29	6.1
14.5	36.86	35.3	14.7	37.63	35.4	14.2	10.93	16.2	14.2	77.68	9.5	14.2	47.85	6.1
15.5	36.88	35.7	15.7	38.17	35.5	15.2	10.52	16.0	15.2	76.16	9.5	15.2	46.32	6.1
16.5	36.86	36.0	16.7	38.68	35.5	16.2	10.12	15.9	16.2	74.69	9.5	16.2	44.72	6.1
17.5	36.86	36.4	17.7	39.17	35.6	17.2	9.74	15.8	17.2	73.30	9.5	17.2	43.05	6.0
18.5	36.88	36.8	18.7	39.65	35.6	18.2	9.38	15.6	18.2	71.95	9.5	18.2	41.31	6.0
19.5	36.95	37.1	19.7	40.12	35.6	19.2	9.01	15.5	19.2	70.62	9.5	19.2	39.54	5.9
20.5	37.04	37.4	20.7	40.61	35.6	20.2	8.64	15.4	20.2	69.32	9.5	20.2	37.77	5.8
21.5	37.15	37.8	21.7	41.11	35.6	21.2	8.26	15.3	21.2	67.98	9.5	21.2	36.05	5.7
22.5	37.29	38.1	22.7	41.60	35.6	22.2	7.87	15.2	22.2	66.59	9.5	22.2	34.41	5.6
23.5	37.41	38.5	23.7	42.13	35.6	23.2	7.46	15.1	23.2	65.15	9.5	23.2	32.84	5.5
24.5	37.47	38.9	24.7	42.68	35.7	24.2	7.05	15.0	24.2	63.65	9.5	24.2	31.35	5.4
25.5	37.48	39.3	25.7	43.23	35.7	25.2	6.63	14.9	25.2	62.11	9.5	25.2	29.93	5.3
26.5	37.42	39.7	26.7	43.78	35.8	26.2	6.21	14.7	26.2	60.55	9.5	26.2	28.56	5.2
27.5	37.29	40.1	27.7	44.32	35.9	27.2	5.80	14.5	27.2	59.03	9.5	27.2	27.19	5.1
28.4	37.09	40.5	28.7	44.85	36.0	28.1	5.42	14.3	28.2	57.54	9.4	28.2	25.77	5.0
29.4	36.84	40.9	29.7	45.34	36.1	29.1	5.06	14.1	29.2	56.11	9.3	29.2	24.27	4.9
30.4	36.61	41.2	30.7	45.80	36.2	30.1	4.71	13.9	30.2	54.74	9.2	30.2	22.71	4.8
31.4	36.37	41.6	31.7	46.25	36.3	31.1	4.38	13.7	31.2	53.45	9.1	31.2	21.08	4.7
32.4	36.17	41.9	32.7	46.69	36.4	32.1	4.06	13.5	32.2	52.19	9.0	32.2	19.43	4.6

CIRCUMPOLAR STARS.

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Ursæ Min. (Polaris).		Mean Solar Date.	51 Cephei (Hev.).		Mean Solar Date.	δ Ursæ Min.		Mean Solar Date.	λ Ursæ Min.		Mean Solar Date.	σ Octantis.	
	Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion South.
Nov.	h m 1 25	° ' " +88 47	Nov.	h m 6 55	° ' " +87 11	Nov.	h m 18 02	° ' " +86 37	Nov.	h m 19 17	° ' " +89 00	Nov.	h m 19 04	° ' " -89 14
	s	"		s	"		s	"		s	"		s	"
1.4	36.17	41.9	1.7	46.69	36.4	1.1	64.06	13.5	1.2	52.19	9.0	1.2	79.43	64.6
2.4	36.01	42.2	2.7	47.14	36.5	2.1	63.76	13.4	2.2	50.94	9.0	2.2	77.77	64.4
3.4	35.89	42.5	3.7	47.58	36.6	3.1	63.43	13.2	3.2	49.67	8.9	3.2	76.15	64.2
4.4	35.80	42.9	4.7	48.05	36.7	4.1	63.09	13.0	4.2	48.39	8.9	4.2	74.61	64.0
5.4	35.70	43.2	5.7	48.55	36.8	5.1	62.73	12.9	5.2	47.05	8.8	5.2	73.17	63.8
6.4	35.59	43.6	6.6	49.05	36.9	6.1	62.36	12.7	6.2	45.66	8.8	6.2	71.83	63.6
7.4	35.43	44.0	7.6	49.57	37.0	7.1	61.98	12.5	7.2	44.20	8.7	7.2	70.60	63.4
8.4	35.20	44.4	8.6	50.11	37.1	8.1	61.60	12.3	8.2	42.70	8.6	8.2	69.45	63.2
9.4	34.91	44.8	9.6	50.63	37.2	9.1	61.22	12.1	9.2	41.20	8.5	9.2	68.31	63.0
10.4	34.54	45.2	10.6	51.14	37.4	10.1	60.86	11.8	10.2	39.73	8.4	10.2	67.18	62.9
11.4	34.11	45.6	11.6	51.62	37.6	11.1	60.51	11.6	11.2	38.30	8.3	11.2	66.02	62.7
12.4	33.66	45.9	12.6	52.08	37.8	12.1	60.19	11.3	12.2	36.93	8.1	12.2	64.79	62.5
13.4	33.20	46.3	13.6	52.52	38.0	13.1	59.90	11.0	13.2	35.64	7.9	13.1	63.50	62.4
14.4	32.76	46.6	14.6	52.94	38.1	14.1	59.62	10.8	14.2	34.42	7.8	14.1	62.15	62.2
15.4	32.35	46.9	15.6	53.34	38.3	15.1	59.35	10.5	15.2	33.24	7.6	15.1	60.77	62.0
16.4	31.99	47.2	16.6	53.73	38.4	16.1	59.08	10.3	16.2	32.10	7.5	16.1	59.41	61.7
17.4	31.65	47.5	17.6	54.15	38.6	17.1	58.80	10.1	17.1	30.96	7.4	17.1	58.09	61.5
18.4	31.34	47.8	18.6	54.57	38.7	18.1	58.52	9.9	18.1	29.77	7.2	18.1	56.85	61.2
19.4	31.02	48.1	19.6	55.00	38.9	19.1	58.22	9.7	19.1	28.56	7.1	19.1	55.73	60.9
20.4	30.67	48.5	20.6	55.47	39.0	20.1	57.91	9.4	20.1	27.28	7.0	20.1	54.68	60.7
21.4	30.25	48.8	21.6	55.92	39.2	21.1	57.61	9.2	21.1	25.96	6.8	21.1	53.74	60.4
22.4	29.77	49.2	22.6	56.39	39.4	22.1	57.31	8.9	22.1	24.64	6.7	22.1	52.84	60.1
23.4	29.21	49.5	23.6	56.83	39.6	23.1	57.01	8.6	23.1	23.33	6.5	23.1	51.99	59.9
24.4	28.58	49.9	24.6	57.25	39.8	24.1	56.73	8.3	24.1	22.06	6.3	24.1	51.11	59.7
25.4	27.92	50.2	25.6	57.65	40.1	25.1	56.48	8.0	25.1	20.84	6.1	25.1	50.19	59.4
26.4	27.22	50.5	26.6	58.02	40.3	26.1	56.25	7.7	26.1	19.72	5.9	26.1	49.21	59.2
27.4	26.54	50.8	27.6	58.37	40.6	27.1	56.04	7.4	27.1	18.66	5.6	27.1	48.17	59.0
28.4	25.89	51.0	28.6	58.69	40.8	28.1	55.85	7.1	28.1	17.67	5.4	28.1	47.11	58.7
29.4	25.26	51.3	29.6	59.01	41.0	29.1	55.67	6.8	29.1	16.71	5.2	29.1	46.04	58.4
30.4	24.69	51.5	30.6	59.34	41.2	30.1	55.49	6.5	30.1	15.77	5.0	30.1	45.02	58.1
31.4	24.15	51.8	31.6	59.67	41.4	31.1	55.29	6.2	31.1	14.82	4.8	31.1	44.07	57.8

CIRCUMPOLAR STARS.

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Ursæ Min. (Polaris).		Mean Solar Date.	51 Cephei (Hev.).		Mean Solar Date.	δ Ursæ Min.		Mean Solar Date.	λ Ursæ Min.		Mean Solar Date.	σ Octantis.	
	Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion South.
Dec.	h m 1 24	° +88 47	Dec.	h m 6 55	° +87 11	Dec.	h m 18 02	° +86 36	Dec.	h m 19 16	° +88 59	Dec.	h m 19 04	° -89 14
	s	"		s	"		s	"		s	"		s	"
1.4	84.15	51.8	1.6	59.67	41.4	1.1	55.29	66.2	1.1	74.82	64.8	1.1	44.07	57.8
2.4	83.62	52.1	2.6	60.02	41.6	2.1	55.08	66.0	2.1	73.81	64.6	2.1	43.22	57.5
3.3	83.09	52.4	3.6	60.40	41.8	3.1	54.86	65.7	3.1	72.76	64.4	3.1	42.48	57.2
4.3	82.53	52.7	4.6	60.78	42.0	4.0	54.63	65.4	4.1	71.66	64.2	4.1	41.86	56.8
5.3	81.90	53.0	5.6	61.17	42.3	5.0	54.39	65.1	5.1	70.53	64.0	5.1	41.34	56.5
6.3	81.21	53.3	6.6	61.56	42.5	6.0	54.17	64.8	6.1	69.38	63.8	6.1	40.89	56.2
7.3	80.45	53.6	7.6	61.92	42.8	7.0	53.95	64.5	7.1	68.26	63.6	7.1	40.47	55.9
8.3	79.63	53.8	8.6	62.26	43.1	8.0	53.75	64.1	8.1	67.19	63.3	8.1	40.05	55.6
9.3	78.76	54.1	9.6	62.59	43.4	9.0	53.58	63.8	9.1	66.20	63.0	9.1	39.56	55.4
10.3	77.89	54.4	10.6	62.87	43.7	10.0	53.43	63.4	10.1	65.28	62.7	10.1	39.02	55.1
11.3	77.04	54.6	11.6	63.15	44.0	11.0	53.30	63.1	11.1	64.44	62.4	11.1	38.44	54.8
12.3	76.21	54.8	12.5	63.40	44.3	12.0	53.19	62.8	12.1	63.66	62.2	12.1	37.83	54.5
13.3	75.43	55.0	13.5	63.63	44.5	13.0	53.08	62.4	13.1	62.93	61.9	13.1	37.22	54.2
14.3	74.70	55.2	14.5	63.87	44.8	14.0	52.97	62.1	14.1	62.20	61.6	14.1	36.65	53.8
15.3	73.98	55.4	15.5	64.13	45.0	15.0	52.87	61.8	15.1	61.47	61.4	15.1	36.15	53.5
16.3	73.28	55.6	16.5	64.39	45.3	16.0	52.75	61.5	16.1	60.72	61.2	16.1	35.76	53.1
17.3	72.56	55.8	17.5	64.66	45.5	17.0	52.61	61.2	17.1	59.94	60.9	17.0	35.47	52.8
18.3	71.78	56.1	18.5	64.94	45.8	18.0	52.46	60.9	18.1	59.11	60.7	18.0	35.30	52.4
19.3	70.97	56.3	19.5	65.22	46.1	19.0	52.33	60.6	19.1	58.26	60.4	19.0	35.19	52.0
20.3	70.07	56.5	20.5	65.50	46.4	20.0	52.20	60.2	20.1	57.43	60.1	20.0	35.14	51.7
21.3	69.12	56.7	21.5	65.74	46.7	21.0	52.10	59.9	21.1	56.64	59.8	21.0	35.10	51.4
22.3	68.11	56.9	22.5	65.96	47.0	22.0	52.02	59.5	22.1	55.90	59.5	22.0	35.03	51.1
23.3	67.07	57.1	23.5	66.14	47.4	22.9	51.96	59.1	23.0	55.25	59.2	23.0	34.92	50.8
24.3	66.04	57.3	24.5	66.31	47.7	23.9	51.93	58.8	24.0	54.69	58.8	24.0	34.76	50.5
25.3	65.03	57.4	25.5	66.45	48.0	24.9	51.92	58.4	25.0	54.20	58.5	25.0	34.55	50.2
26.3	64.07	57.5	26.5	66.57	48.3	25.9	51.92	58.1	26.0	53.77	58.2	26.0	34.32	49.9
27.3	63.14	57.6	27.5	66.70	48.6	26.9	51.92	57.7	27.0	53.36	57.9	27.0	34.11	49.5
28.3	62.27	57.7	28.5	66.81	48.9	27.9	51.92	57.4	28.0	52.96	57.6	28.0	33.98	49.2
29.3	61.44	57.9	29.5	66.95	49.2	28.9	51.90	57.1	29.0	52.54	57.3	29.0	33.94	48.8
30.3	60.60	58.0	30.5	67.11	49.5	29.9	51.87	56.8	30.0	52.08	57.0	30.0	34.03	48.4
31.3	59.75	58.1	31.5	67.27	49.8	30.9	51.84	56.5	31.0	51.57	56.8	31.0	34.23	48.0
32.3	58.85	58.3	32.5	67.43	50.1	31.9	51.80	56.2	32.0	51.02	56.5	32.0	34.55	47.6

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	33 Piscium.		α Andromedæ.		β Cassiopeiæ.		22 Andromedæ.		γ Pegasi. (Algenib.)	
	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.
	h m o oo	° ' "	h m o 03	° ' "	h m o 03	° ' "	h m o 05	° ' "	h m o 08	° ' "
		- 6 14		+28 33		+58 36		+45 31		+14 38
	s	"	s	"	s	"	s	"	s	"
Jan. 0.2	22.39	61.5	22.85	28.7	60.95	72.3	17.40	72.9	14.80	45.7
10.2	22.28	62.2	22.70	27.7	60.63	71.5	17.18	72.0	14.68	44.8
20.2	22.17	62.7	22.56	26.5	60.32	70.2	16.98	70.7	14.56	43.8
30.2	22.07	63.1	22.43	25.0	60.04	68.4	16.79	69.0	14.45	42.7
Feb. 9.1	21.99	63.3	22.32	23.4	59.80	66.2	16.63	67.0	14.35	41.6
19.1	21.93	63.4	22.23	21.7	59.60	63.8	16.50	64.8	14.28	40.6
Mar. 1.1	21.90	63.2	22.18	20.0	59.46	61.1	16.41	62.5	14.23	39.6
11.0	21.90	62.9	22.16	18.4	59.40	58.3	16.37	60.1	14.22	38.7
21.0	21.92	62.3	22.18	16.9	59.40	55.5	16.39	57.8	14.24	38.0
31.0	21.99	61.5	22.25	15.7	59.48	52.9	16.46	55.7	14.30	37.5
Apr. 10.0	22.09	60.4	22.36	14.7	59.65	50.5	16.59	53.9	14.40	37.3
19.9	22.24	59.2	22.52	14.0	59.89	48.5	16.77	52.4	14.54	37.5
29.9	22.42	57.7	22.73	13.7	60.20	46.8	17.02	51.3	14.72	37.9
May 9.9	22.64	56.0	22.97	13.9	60.57	45.6	17.31	50.6	14.94	38.6
19.9	22.89	54.1	23.25	14.3	60.99	45.0	17.64	50.4	15.20	39.6
29.8	23.16	52.2	23.56	15.2	61.46	44.8	18.00	50.7	15.48	41.0
June 8.8	23.45	50.2	23.88	16.5	61.95	45.1	18.38	51.4	15.78	42.6
18.8	23.76	48.1	24.21	18.0	62.45	46.0	18.78	52.6	16.09	44.3
28.7	24.06	46.2	24.55	19.9	62.95	47.4	19.18	54.2	16.40	46.3
July 8.7	24.36	44.3	24.88	22.0	63.43	49.2	19.56	56.2	16.71	48.3
18.7	24.65	42.6	25.19	24.2	63.89	51.5	19.93	58.5	17.00	50.4
28.7	24.92	41.0	25.47	26.6	64.31	54.1	20.26	61.0	17.27	52.5
Aug. 7.6	25.16	39.7	25.73	29.0	64.69	56.9	20.56	63.8	17.52	54.6
17.6	25.36	38.7	25.95	31.5	65.01	60.0	20.82	66.7	17.73	56.5
27.6	25.54	37.9	26.13	33.9	65.27	63.3	21.03	69.6	17.91	58.3
Sept. 6.6	25.67	37.4	26.27	36.2	65.47	66.6	21.20	72.6	18.05	60.0
16.5	25.76	37.2	26.38	38.4	65.60	69.9	21.31	75.5	18.15	61.4
26.5	25.82	37.2	26.44	40.4	65.68	73.2	21.38	78.4	18.21	62.7
Oct. 6.5	25.84	37.4	26.46	42.2	65.69	76.4	21.40	81.0	18.24	63.6
16.4	25.82	37.9	26.44	43.8	65.64	79.4	21.37	83.5	18.24	64.4
26.4	25.78	38.5	26.40	45.1	65.53	82.1	21.31	85.7	18.21	65.0
Nov. 5.4	25.71	39.2	26.33	46.1	65.37	84.6	21.21	87.5	18.15	65.3
15.4	25.63	40.0	26.23	46.8	65.17	86.6	21.07	89.1	18.07	65.4
25.3	25.53	40.8	26.12	47.3	64.93	88.2	20.91	90.2	17.97	65.3
Dec. 5.3	25.42	41.7	25.99	47.4	64.66	89.3	20.73	90.9	17.86	65.0
15.3	25.30	42.5	25.85	47.2	64.36	90.0	20.53	91.2	17.74	64.6
25.3	25.18	43.3	25.70	46.7	64.04	90.1	20.32	91.0	17.62	63.9
35.2	25.06	44.0	25.55	45.9	63.72	89.6	20.11	90.3	17.49	63.1

FIXED STARS, 1903.

(CONSTANTS OF STRUVE AND PETERS.)

325

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	σ Andromedæ.		ι Ceti.		44 Piscium.		β Hydri.		ι Ceti.	
	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion South.
	h m 0 13	° ' " +36 14	h m 0 14	° ' " - 9 21	h m 0 20	° ' " + 1 24	h m 0 20	° ' " -77 47	h m 0 25	° ' " - 4 29
Jan. 0.2	16.19	63.9	29.35	44.4	26.14	10.0	36.84	80.4	5.63	36.8
10.2	16.02	63.0	29.22	45.0	26.02	9.3	35.93	79.4	5.51	37.5
20.2	15.85	61.8	29.11	45.4	25.90	8.6	35.07	77.8	5.39	38.1
30.2	15.70	60.3	29.00	45.7	25.80	7.9	34.29	75.7	5.28	38.6
Feb. 9.1	15.56	58.6	28.91	45.8	25.70	7.4	33.62	73.2	5.18	38.9
19.1	15.45	56.7	28.84	45.7	25.62	6.9	33.06	70.2	5.10	39.1
Mar. 1.1	15.38	54.7	28.79	45.4	25.57	6.6	32.64	66.9	5.05	39.0
11.1	15.34	52.8	28.77	44.9	25.55	6.5	32.36	63.4	5.02	38.8
21.1	15.35	50.9	28.79	44.1	25.56	6.6	32.23	59.6	5.02	38.3
31.1	15.40	49.2	28.84	43.1	25.60	7.0	32.26	55.9	5.06	37.6
Apr. 10.0	15.51	47.8	28.93	41.9	25.69	7.6	32.44	52.1	5.14	36.7
19.9	15.67	46.7	29.06	40.4	25.81	8.4	32.78	48.4	5.26	35.5
29.9	15.88	46.0	29.23	38.8	25.98	9.5	33.28	44.9	5.42	34.1
May 9.9	16.14	45.7	29.44	37.0	26.18	10.8	33.91	41.6	5.62	32.5
19.9	16.42	45.8	29.68	35.0	26.42	12.4	34.67	38.7	5.85	30.7
29.8	16.75	46.3	29.94	33.0	26.68	14.1	35.54	36.1	6.12	28.8
June 8.8	17.09	47.3	30.23	30.9	26.97	16.0	36.51	34.0	6.40	26.8
18.8	17.44	48.6	30.54	28.9	27.27	17.9	37.55	32.3	6.70	24.8
28.8	17.80	50.3	30.84	26.9	27.58	19.9	38.62	31.2	7.00	22.8
July 8.7	18.15	52.3	31.15	25.0	27.88	21.9	39.71	30.7	7.31	20.9
18.7	18.48	54.5	31.44	23.3	28.17	23.8	40.79	30.7	7.60	19.1
28.7	18.79	56.9	31.72	21.9	28.44	25.5	41.81	31.4	7.88	17.5
Aug. 7.6	19.07	59.5	31.97	20.7	28.70	27.1	42.76	32.5	8.13	16.0
17.6	19.32	62.1	32.18	19.7	28.91	28.5	43.60	34.2	8.36	14.9
27.6	19.52	64.8	32.37	19.1	29.10	29.7	44.31	36.3	8.55	14.0
Sept. 6.6	19.68	67.4	32.52	18.8	29.25	30.6	44.86	38.9	8.70	13.4
16.5	19.80	69.9	32.62	18.7	29.36	31.3	45.23	41.7	8.82	13.0
26.5	19.87	72.3	32.69	18.9	29.44	31.8	45.42	44.8	8.90	12.9
Oct. 6.5	19.90	74.5	32.72	19.4	29.48	32.0	45.42	47.9	8.94	13.1
16.5	19.90	76.5	32.72	20.0	29.48	32.0	45.24	51.0	8.95	13.5
26.4	19.86	78.2	32.69	20.8	29.46	31.8	44.87	54.0	8.93	14.0
Nov. 5.4	19.78	79.7	32.64	21.7	29.42	31.4	44.34	56.6	8.89	14.7
15.4	19.68	80.9	32.56	22.6	29.35	30.9	43.68	58.9	8.82	15.5
25.3	19.56	81.7	32.46	23.6	29.26	30.3	42.89	60.8	8.74	16.3
Dec. 5.3	19.42	82.1	32.36	24.6	29.16	29.6	42.02	62.0	8.64	17.2
15.3	19.26	82.2	32.24	25.5	29.05	28.9	41.10	62.7	8.53	18.0
25.3	19.09	81.9	32.12	26.3	28.93	28.1	40.16	62.7	8.41	18.8
35.2	18.92	81.2	32.00	27.0	28.81	27.3	39.23	62.2	8.29	19.6

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	π Andromedæ.		α Cassiopeizæ.		β Ceti.		21 Cassiopeizæ.		σ Cassiopeizæ.	
	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.
	h m 0 31	+33 11	h m 0 34	+56 00	h m 0 38	-18 30	h m 0 39	+74 27	h m 0 39	+47 45
	s	"	s	"	s	"	s	"	s	"
Jan. 0.3	42.67	19.0	61.25	37.0	43.49	74.7	16.74	48.9	20.16	28.2
10.2	42.51	18.2 0.8	60.96	36.5 0.5	43.36	75.2 0.5	16.02	48.9 0.0	19.93	27.7 0.5
20.2	42.34	17.2 1.0	60.67	35.5 1.0	43.22	75.5 0.3	15.31	48.2 0.7	19.70	26.7 1.0
30.2	42.19	15.8 1.4	60.39	34.1 1.4	43.10	75.6 0.1	14.63	47.0 1.2	19.48	25.3 1.4
Feb. 9.1	42.05	14.3 1.5	60.13	32.3 1.8	42.98	75.3 0.3	14.00	45.2 1.8	19.28	23.6 1.7
		1.7		2.2		0.5		2.3		2.0
19.1	41.93	12.6 1.8	59.91	30.1 2.4	42.88	74.8 0.7	13.46	42.9 2.6	19.11	21.6 2.2
Mar. 1.1	41.84	10.8 1.7	59.74	27.7 2.6	42.81	74.1 1.0	13.03	40.3 2.4	18.97	19.4 2.3
11.0	41.79	9.1 1.7	59.63	25.1 2.6	42.76	73.1 1.3	12.73	37.5 3.1	18.88	17.1 2.3
21.0	41.78	7.4 1.5	59.59	22.5 2.5	42.75	71.8 1.6	12.57	34.4 3.0	18.85	14.8 2.2
31.0	41.81	5.9 1.3	59.62	20.0 2.4	42.77	70.2 1.7	12.56	31.4 3.0	18.87	12.6 2.0
Apr. 10.0	41.90	4.6 1.0	59.72	17.6 2.1	42.84	68.5 2.0	12.71	28.4 2.7	18.96	10.6 1.8
20.0	42.03	3.6 0.6	59.90	15.5 1.8	42.95	66.5 2.1	13.01	25.7 2.4	19.11	8.8 1.4
29.9	42.22	3.0 0.3	60.14	13.7 1.3	43.10	64.4 2.2	13.45	23.3 2.0	19.32	7.4 1.0
May 9.9	42.45	2.7 0.1	60.46	12.4 0.9	43.28	62.2 2.3	14.03	21.3 1.6	19.58	6.4 0.6
19.9	42.72	2.8 0.5	60.82	11.5 0.4	43.51	59.9 2.3	14.71	19.7 1.1	19.90	5.8 0.1
29.8	43.02	3.3 0.9	61.24	11.1 0.1	43.77	57.6 2.3	15.48	18.6 0.5	20.25	5.7 0.3
June 8.8	43.35	4.2 1.3	61.69	11.2 0.6	44.05	55.3 2.2	16.32	18.1 0.1	20.64	6.0 0.8
18.8	43.69	5.5 1.6	62.16	11.8 1.1	44.35	53.1 2.1	17.19	18.2 0.5	21.04	6.8 1.2
28.8	44.04	7.1 1.9	62.63	12.9 1.5	44.67	51.0 1.8	18.09	18.7 1.1	21.45	8.0 1.6
July 8.7	44.38	9.0 2.0	63.11	14.4 2.0	44.98	49.2 1.6	18.97	19.8 1.6	21.86	9.6 2.0
18.7	44.72	11.0 2.3	63.56	16.4 2.2	45.29	47.6 1.3	19.83	21.4 2.1	22.26	11.6 2.2
28.7	45.03	13.3 2.4	63.99	18.6 2.6	45.58	46.3 0.9	20.63	23.5 2.5	22.63	13.8 2.6
Aug. 7.7	45.32	15.7 2.5	64.38	21.2 2.9	45.85	45.4 0.6	21.37	26.0 2.8	22.98	16.4 2.7
17.6	45.57	18.2 2.4	64.73	24.1 3.0	46.10	44.8 0.3	22.03	28.8 3.2	23.28	19.1 2.8
27.6	45.79	20.6 2.5	65.02	27.1 3.1	46.31	44.5 0.1	22.59	32.0 3.3	23.54	21.9 2.9
Sept. 6.6	45.97	23.1 2.3	65.27	30.2 3.2	46.48	44.6 0.5	23.06	35.3 3.5	23.76	24.8 2.9
16.5	46.10	25.4 2.2	65.45	33.4 3.1	46.62	45.1 0.7	23.40	38.8 3.6	23.93	27.7 2.9
26.5	46.20	27.6 2.1	65.58	36.5 3.1	46.71	45.8 1.0	23.64	42.4 3.6	24.05	30.6 2.7
Oct. 6.5	46.26	29.7 1.9	65.65	39.6 3.0	46.77	46.8 1.2	23.76	46.0 3.6	24.12	33.3 2.6
16.5	46.28	31.6 1.6	65.67	42.6 2.7	46.79	48.0 1.3	23.75	49.6 3.4	24.15	35.9 2.4
26.4	46.26	33.2 1.4	65.63	45.3 2.5	46.78	49.3 1.4	23.63	53.0 3.2	24.13	38.3 2.1
Nov. 5.4	46.21	34.6 1.0	65.54	47.8 2.2	46.73	50.7 1.4	23.39	56.2 2.8	24.07	40.4 1.8
15.4	46.14	35.6 0.8	65.40	50.0 1.8	46.66	52.1 1.4	23.05	59.0 2.5	23.98	42.2 1.5
25.4	46.04	36.4 0.5	65.22	51.8 1.3	46.58	53.5 1.2	22.60	61.5 2.0	23.84	43.7 1.1
Dec. 5.3	45.92	36.9 0.1	65.01	53.1 0.9	46.47	54.7 1.2	22.06	63.5 1.6	23.68	44.8 0.7
15.3	45.78	37.0 0.2	64.76	54.0 0.4	46.35	55.9 0.9	21.45	65.1 0.9	23.49	45.5 0.1
25.3	45.62	36.8 0.6	64.48	54.4 0.2	46.22	56.8 0.7	20.77	66.0 0.3	23.28	45.6 0.2
35.2	45.46	36.2	64.20	54.2	46.09	57.5	20.06	66.3	23.06	45.4

FIXED STARS, 1903.

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(CONSTANTS OF STRUVE AND PETERS.)

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	δ Piscium.		γ Cassiopeizæ.		μ Andromedæ.		43 Cephei (H.).		ϵ Piscium.	
	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.
	h m 0 43	° ' + 7 03	h m 0 50	° ' + 60 11	h m 0 51	° ' + 37 58	h m 0 55	° ' + 85 44	h m 0 57	° ' + 7 22
	s	"	s	"	s	"	s	"	s	"
Jan. 0.3	39.48	28.2	52.63	47.2	23.02	35.9	34.35	33.7	55.11	6.3
10.2	39.36 .12	27.4 .8	52.29 .34	47.0 .2	22.84 .18	35.4 .5	31.54 .81	34.1 .4	54.99 .12	5.6 .7
20.2	39.23 .13	26.6 .8	51.94 .35	46.3 .7	22.66 .18	34.4 .10	28.70 .84	33.9 .8	54.86 .13	4.8 .8
30.2	39.11 .12	25.8 .8	51.61 .33	45.1 .2	22.48 .18	33.2 .12	25.96 .74	33.1 .8	54.73 .13	4.1 .7
Feb. 9.2	39.00 .11	25.1 .7	51.30 .31	44.1 .7	22.31 .17	31.7 .5	23.41 .55	31.6 .5	54.61 .12	3.3 .8
	39.00 .10	25.1 .7	51.30 .27	43.4 .2	22.31 .14	31.7 .7	23.41 .25	31.6 .20	54.61 .10	3.3 .6
19.1	38.90	24.4	51.03	41.3	22.17	30.0	21.16	29.6	54.51	2.7
Mar. 1.1	38.83 .07	23.9 .5	50.80 .23	38.9 .4	22.05 .12	28.2 .8	19.30 .86	27.1 .5	54.42 .09	2.1 .6
11.0	38.78 .05	23.5 .4	50.64 .16	36.4 .2	21.97 .08	26.3 .9	17.90 .40	24.3 .8	54.36 .06	1.7 .4
21.0	38.77 .01	23.2 .3	50.56 .08	36.4 .7	21.97 .04	26.3 .8	17.90 .89	24.3 .30	54.36 .03	1.7 .2
31.0	38.79 .02	23.2 .0	50.56 .01	33.7 .7	21.93 .01	24.5 .8	17.01 .35	21.3 .2	54.33 .01	1.5 .1
	38.79 .06	23.2 .2	50.55 .08	31.0 .5	21.94 .06	22.7 .5	16.66 .22	18.1 .3	54.34 .05	1.4 .2
Apr. 10.0	38.85	23.4	50.63	28.5	22.00	21.2	16.88	15.0	54.39	1.6
20.0	38.96 .11	23.9 .5	50.80 .17	26.1 .2	22.12 .12	19.8 .4	17.63 .75	12.0 .30	54.48 .09	2.1 .5
29.9	39.11 .15	23.9 .8	50.80 .24	26.1 .0	22.12 .18	19.8 .9	17.63 .27	12.0 .28	54.48 .14	2.1 .7
May 9.9	39.30 .19	24.7 .10	51.04 .33	24.1 .6	22.30 .22	18.9 .7	18.90 .73	9.2 .2	54.62 .17	2.8 .0
19.9	39.52 .22	25.7 .3	51.37 .39	22.5 .2	22.52 .27	18.2 .2	20.63 .14	6.8 .1	54.79 .21	3.8 .2
	39.52 .26	27.0 .4	51.76 .44	21.3 .7	22.79 .30	18.0 .2	22.77 .46	4.7 .5	55.00 .25	5.0 .4
29.9	39.78	28.4	52.20	20.6	23.09	18.2	25.23	3.2	55.25	6.4
June 8.8	40.06 .28	30.1 .7	52.68 .48	20.4 .2	23.43 .34	18.8 .6	27.94 .71	2.2 .0	55.52 .27	8.0 .6
18.8	40.35 .29	31.9 .8	53.19 .51	20.4 .3	23.43 .35	18.8 .9	27.94 .88	2.2 .5	55.52 .30	8.0 .8
28.8	40.66 .31	31.9 .9	53.19 .53	20.7 .8	23.78 .37	19.7 .4	30.82 .98	1.7 .0	55.82 .30	9.8 .9
July 8.7	40.96 .30	33.8 .0	53.72 .52	21.5 .2	24.15 .36	21.1 .6	33.80 .98	1.8 .6	56.12 .31	11.7 .9
	40.96 .30	35.8 .9	54.24 .51	22.7 .7	24.51 .36	22.7 .9	36.78 .92	2.4 .1	56.43 .30	13.6 .9
18.7	41.26	37.7	54.75	24.4	24.87	24.6	39.70	3.5	56.73	15.5
28.7	41.55 .29	39.6 .9	55.24 .49	26.5 .2	25.21 .34	26.8 .2	42.49 .79	5.2 .7	57.02 .29	17.4 .9
Aug. 7.7	41.81 .26	41.4 .8	55.69 .45	26.5 .5	25.52 .31	26.8 .3	42.49 .60	5.2 .2	57.02 .27	17.4 .7
17.6	42.04 .23	43.0 .6	56.10 .41	29.0 .7	25.52 .28	29.1 .5	45.09 .36	7.4 .5	57.29 .24	19.1 .7
27.6	42.25 .21	44.4 .4	56.45 .35	31.7 .9	25.80 .25	31.6 .5	47.45 .66	9.9 .9	57.53 .22	20.8 .4
	42.25 .17	44.4 .2	56.45 .29	34.6 .1	26.05 .21	34.1 .5	49.51 .73	12.8 .3	57.75 .18	22.2 .2
Sept. 6.6	42.42	45.6	56.74	37.7	26.26	36.6	51.24	16.1	57.93	23.4
16.5	42.56 .14	46.6 .0	56.98 .24	40.9 .2	26.43 .17	39.1 .5	52.60 .36	19.6 .5	58.08 .15	24.4 .0
26.5	42.66 .10	47.4 .8	57.15 .17	40.9 .3	26.43 .12	39.1 .4	52.60 .96	19.6 .6	58.08 .11	24.4 .8
Oct. 6.5	42.72 .06	47.4 .5	57.26 .11	44.2 .2	26.55 .09	41.5 .3	53.56 .54	23.2 .7	58.19 .08	25.2 .5
16.5	42.75 .03	47.9 .3	57.31 .05	47.4 .2	26.64 .04	43.8 .2	54.10 .11	26.9 .8	58.27 .05	25.7 .4
	42.75 .00	48.2 .2	57.31 .02	50.5 .30	26.68 .01	45.9 .9	54.21 .34	30.7 .7	58.32 .01	26.1 .1
26.5	42.75	48.4	57.29	53.5	26.69	47.8	53.87	34.4	58.33	26.2
Nov. 5.4	42.73 .02	48.3 .1	57.22 .07	56.2 .7	26.66 .03	49.5 .7	53.08 .79	37.9 .5	58.32 .01	26.1 .1
15.4	42.68 .05	48.0 .3	57.08 .14	56.2 .4	26.66 .06	49.5 .4	53.08 .23	37.9 .3	58.32 .04	26.1 .2
25.4	42.61 .07	47.7 .3	56.90 .18	58.6 .2	26.60 .09	50.9 .1	51.85 .65	41.2 .0	58.28 .06	25.9 .4
Dec. 5.3	42.52 .09	47.2 .5	56.66 .24	60.7 .7	26.51 .11	52.0 .8	50.20 .01	44.2 .4	58.22 .08	25.5 .5
	42.52 .10	47.2 .6	56.66 .27	62.4 .2	26.40 .14	52.8 .4	48.19 .35	46.6 .2	58.14 .09	25.0 .5
15.3	42.42	46.6	56.39	63.6	26.26	53.2	45.84	48.7	58.05	24.5
25.3	42.31 .11	45.9 .7	56.08 .31	64.2 .6	26.10 .16	53.2 .0	43.24 .60	50.1 .4	57.94 .11	23.8 .7
35.3	42.19 .12	45.1 .8	55.75 .33	64.4 .2	25.92 .18	52.9 .3	40.46 .78	51.0 .9	57.82 .12	23.1 .7

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	β Andromedæ.		κ Tucanæ.		f Piscium.		θ Ceti.		γ Cassiopeiz.	
	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion North.
	h m I 04	° ' +35 06	h m I 12	° ' -69 22	h m I 12	° ' + 3 06	h m I 19	° ' - 8 40	h m I 23	° ' +69 45
	s "	s "	s "	s "	s "	s "	s "	s "	s "	s "
Jan. 0.3	18.94	33.5	28.09	108.8	48.37	13.0	11.06	66.5	63.08	73.6
10.2	18.78	33.0	27.54	108.8	48.24	12.2	10.93	67.3	62.57	74.0
20.2	18.60	32.2	26.99	108.1	48.12	11.5	10.80	67.9	62.03	73.9
30.2	18.43	31.1	26.46	106.9	47.99	10.8	10.66	68.4	61.50	73.2
Feb. 9.2	18.27	29.8	25.97	105.2	47.86	10.3	10.53	68.6	60.98	71.9
19.1	18.12	28.2	25.52	102.9	47.74	9.8	10.41	68.6	60.51	70.2
Mar. 1.1	17.99	26.6	25.14	100.2	47.65	9.4	10.30	68.5	60.10	68.0
11.1	17.90	24.9	24.84	97.2	47.58	9.3	10.22	68.0	59.77	65.4
21.0	17.86	23.2	24.61	93.9	47.53	9.3	10.17	67.4	59.55	62.7
31.0	17.85	21.6	24.48	90.4	47.52	9.5	10.16	66.5	59.43	59.9
Apr. 10.0	17.90	20.1	24.44	86.7	47.56	9.9	10.18	65.3	59.44	57.0
20.0	18.00	19.0	24.50	83.0	47.63	10.6	10.25	64.0	59.57	54.3
29.0	18.16	18.1	24.67	79.4	47.75	11.6	10.36	62.4	59.82	51.8
May 9.9	18.36	17.5	24.93	75.8	47.91	12.7	10.51	60.6	60.18	49.6
19.9	18.61	17.4	25.29	72.4	48.11	14.1	10.70	58.7	60.64	47.7
29.9	18.90	17.6	25.73	69.3	48.35	15.7	10.92	56.6	61.19	46.3
June 8.8	19.22	18.1	26.25	66.6	48.61	17.4	11.18	54.5	61.81	45.4
18.8	19.56	19.1	26.83	64.2	48.90	19.2	11.46	52.4	62.49	45.0
28.8	19.91	20.3	27.46	62.3	49.19	21.1	11.76	50.4	63.20	45.1
July 8.8	20.27	21.9	28.12	60.9	49.50	23.1	12.06	48.4	63.92	45.7
18.7	20.62	23.8	28.79	60.1	49.80	24.9	12.36	46.6	64.64	46.8
28.7	20.95	25.8	29.46	59.8	50.09	26.7	12.66	45.0	65.34	48.4
Aug. 7.7	21.27	28.0	30.10	60.2	50.37	28.4	12.94	43.6	66.01	50.4
17.6	21.55	30.3	30.69	61.1	50.62	29.8	13.19	42.5	66.63	52.8
27.6	21.80	32.7	31.22	62.6	50.84	31.1	13.42	41.7	67.18	55.5
Sept. 6.6	22.02	35.0	31.67	64.6	51.04	32.1	13.62	41.3	67.67	58.4
16.6	22.20	37.3	32.03	67.0	51.20	32.8	13.79	41.1	68.08	61.6
26.5	22.34	39.6	32.28	69.7	51.32	33.4	13.92	41.3	68.41	64.9
Oct. 6.5	22.44	41.7	32.43	72.7	51.42	33.6	14.02	41.7	68.65	68.3
16.5	22.50	43.6	32.47	75.8	51.48	33.7	14.08	42.4	68.80	71.7
26.5	22.52	45.4	32.40	79.0	51.51	33.5	14.12	43.2	68.86	75.0
Nov. 5.4	22.52	46.9	32.22	82.0	51.51	33.2	14.12	44.3	68.83	78.2
15.4	22.47	48.2	31.94	84.8	51.49	32.8	14.09	45.4	68.70	81.2
25.4	22.40	49.2	31.58	87.2	51.44	32.2	14.04	46.5	68.49	83.8
Dec. 5.3	22.30	49.9	31.15	89.3	51.37	31.5	13.97	47.6	68.19	86.1
15.3	22.18	50.3	30.66	90.8	51.28	30.8	13.88	48.7	67.82	88.0
25.3	22.04	50.4	30.14	91.8	51.18	30.0	13.77	49.7	67.38	89.3
35.3	21.87	50.1	29.59	92.1	51.06	29.3	13.65	50.6	66.89	90.1

FIXED STARS, 1903.

(CONSTANTS OF STRUVE AND PETERS.)

329

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	η Piscium.		ν Andromedæ.		π Piscium.		α Eridani. (Achernar.)		ν Piscium.	
	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion North.
	h m I 26	° ' +14 50	h m I 31	° ' +40 55	h m I 31	° ' +11 38	h m I 34	° ' -57 43	h m I 36	° ' + 4 59
	s "	"	s "	"	s "	"	s "	"	s "	"
Jan. 0.3	18.36	48.2	7.43	24.4	58.17	45.2	6.19	64.9	23.78	48.0
10.3	18.23	47.6	7.25	24.3	58.05	44.6	5.86	65.4	23.66	47.2
20.2	18.10	46.8	7.06	23.7	57.92	43.9	5.52	65.3	23.52	46.5
30.2	17.96	46.0	6.85	22.9	57.78	43.1	5.18	64.7	23.39	45.9
Feb. 9.2	17.82	45.2	6.65	21.6	57.64	42.4	4.86	63.5	23.25	45.2
19.2	17.69	44.3	6.46	20.2	57.51	41.6	4.56	61.9	23.12	44.7
Mar. 1.1	17.58	43.5	6.30	18.5	57.39	40.9	4.29	59.8	23.01	44.3
11.1	17.49	42.8	6.17	16.7	57.30	40.4	4.07	57.2	22.92	44.0
21.1	17.43	42.1	6.08	14.8	57.24	39.9	3.90	54.4	22.85	43.9
31.0	17.41	41.7	6.04	13.0	57.22	39.6	3.78	51.2	22.82	44.0
Apr. 10.0	17.43	41.4	6.06	11.3	57.23	39.5	3.74	47.9	22.83	44.3
20.0	17.50	41.4	6.13	9.7	57.29	39.7	3.75	44.4	22.88	44.9
30.0	17.61	41.6	6.26	8.4	57.40	40.1	3.84	40.9	22.98	45.7
May 9.9	17.77	42.1	6.45	7.4	57.54	40.7	4.00	37.4	23.12	46.7
19.9	17.96	42.8	6.69	6.8	57.73	41.6	4.23	33.9	23.30	47.9
29.9	18.20	43.8	6.97	6.5	57.96	42.8	4.52	30.7	23.52	49.4
June 8.9	18.47	45.1	7.30	6.7	58.22	44.1	4.87	27.7	23.78	51.0
18.8	18.76	46.6	7.65	7.2	58.50	45.7	5.27	25.0	24.05	52.7
28.8	19.06	48.2	8.02	8.0	58.80	47.4	5.70	22.8	24.34	54.6
July 8.8	19.37	49.9	8.39	9.3	59.11	49.2	6.16	21.0	24.64	56.4
18.7	19.68	51.8	8.77	10.8	59.42	51.0	6.63	19.6	24.95	58.2
28.7	19.99	53.6	9.14	12.6	59.72	52.8	7.10	18.9	25.24	60.0
Aug. 7.7	20.27	55.4	9.49	14.6	60.00	54.6	7.55	18.7	25.53	61.7
17.7	20.54	57.2	9.81	16.8	60.27	56.2	7.98	19.0	25.79	63.2
27.7	20.78	58.9	10.10	19.1	60.51	57.8	8.37	20.0	26.03	64.5
Sept. 6.6	20.99	60.4	10.36	21.5	60.72	59.1	8.71	21.5	26.24	65.6
16.6	21.16	61.7	10.58	23.9	60.90	60.3	8.99	23.4	26.42	66.4
26.6	21.31	62.8	10.77	26.2	61.05	61.2	9.21	25.7	26.57	67.0
Oct. 6.5	21.42	63.8	10.91	28.6	61.17	62.0	9.37	28.4	26.69	67.4
16.5	21.50	64.6	11.01	30.8	61.25	62.6	9.45	31.3	26.78	67.5
26.5	21.55	65.1	11.07	32.8	61.30	62.9	9.46	34.3	26.83	67.4
Nov. 5.4	21.56	65.5	11.09	34.7	61.33	63.1	9.40	37.3	26.86	67.2
15.4	21.56	65.7	11.08	36.4	61.32	63.1	9.28	40.2	26.86	66.8
25.4	21.52	65.7	11.02	37.8	61.29	62.9	9.10	42.8	26.83	66.3
Dec. 5.4	21.46	65.5	10.94	38.9	61.24	62.6	8.88	45.1	26.78	65.7
15.3	21.38	65.2	10.82	39.6	61.16	62.2	8.61	46.9	26.70	65.1
25.3	21.27	64.8	10.67	40.1	61.06	61.7	8.31	48.3	26.60	64.4
35.3	21.16	64.2	10.50	40.1	60.94	61.1	7.99	49.2	26.49	63.6

FIXED STARS, 1903.

(CONSTANTS OF STRUVE AND PETERS.)

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	♈ Piscium.		♋ Ceti.		♈ Arietis.		♈ Cassiopeiz.		♈ Andromedæ.	
	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.
	h m I 40	° ' + 8 40	h m I 46	° ' - 10 48	h m I 49	° ' + 20 19	h m I 55	° ' + 71 56	h m I 57	° ' + 41 51
	s	"	s	"	s	"	s	"	s	"
Jan. 0.3	17.11	11.0	41.06	57.3	17.86	66.1	12.14	83.3	58.11	61.7
10.3	16.99	10.3	40.94	58.2	17.73	65.6	11.59	84.2	57.94	61.8
20.3	16.86	9.6	40.80	58.9	17.59	65.0	11.00	84.5	57.74	61.5
30.2	16.72	8.9	40.66	59.4	17.44	64.2	10.38	84.3	57.53	60.9
Feb. 9.2	16.58	8.2	40.51	59.6	17.29	63.4	9.77	83.4	57.32	59.9
19.2	16.45	7.6	40.37	59.6	17.14	62.5	9.19	82.0	57.11	58.7
Mar. 1.1	16.33	7.0	40.25	59.4	17.01	61.5	8.67	80.2	56.92	57.2
11.1	16.23	6.6	40.14	58.9	16.90	60.6	8.23	77.9	56.77	55.5
21.1	16.16	6.3	40.06	58.2	16.82	59.7	7.89	75.3	56.65	53.8
31.1	16.13	6.2	40.02	57.2	16.77	59.0	7.67	72.6	56.57	52.0
Apr. 10.0	16.14	6.3	40.02	56.0	16.77	58.4	7.58	69.7	56.56	50.2
20.0	16.19	6.6	40.05	54.5	16.82	57.9	7.62	66.9	56.60	48.6
30.0	16.28	7.1	40.13	52.8	16.91	57.8	7.80	64.2	56.70	47.2
May 9.9	16.42	7.9	40.26	51.0	17.05	57.9	8.11	61.8	56.86	46.1
19.9	16.60	9.0	40.42	49.0	17.23	58.3	8.55	59.6	57.07	45.2
29.9	16.82	10.2	40.63	46.8	17.46	58.9	9.09	57.9	57.34	44.8
June 8.9	17.08	11.7	40.87	44.6	17.72	59.8	9.73	56.5	57.64	44.6
18.8	17.35	13.3	41.14	42.5	18.01	61.0	10.43	55.7	57.98	44.9
28.8	17.65	15.0	41.42	40.3	18.31	62.4	11.19	55.3	58.35	45.4
July 8.8	17.95	16.8	41.72	38.3	18.63	63.9	11.98	55.5	58.72	46.4
18.8	18.25	18.7	42.02	36.4	18.95	65.6	12.79	56.1	59.11	47.6
28.7	18.55	20.4	42.32	34.8	19.26	67.3	13.59	57.2	59.49	49.2
Aug. 7.7	18.84	22.1	42.61	33.4	19.56	69.1	14.36	58.8	59.85	51.0
17.7	19.11	23.7	42.88	32.3	19.85	70.9	15.10	60.8	60.20	52.9
27.7	19.35	25.1	43.13	31.6	20.11	72.6	15.78	63.1	60.52	55.0
Sept. 6.6	19.57	26.4	43.35	31.2	20.34	74.2	16.40	65.8	60.81	57.2
16.6	19.76	27.4	43.54	31.1	20.54	75.7	16.94	68.7	61.07	59.5
26.6	19.91	28.2	43.70	31.4	20.72	77.1	17.40	71.8	61.29	61.8
Oct. 6.5	20.03	28.7	43.82	31.9	20.86	78.3	17.77	75.1	61.46	64.1
16.5	20.12	29.1	43.92	32.7	20.96	79.4	18.04	78.5	61.61	66.3
26.5	20.19	29.3	43.98	33.7	21.04	80.2	18.21	81.8	61.70	68.4
Nov. 5.5	20.22	29.2	44.00	34.9	21.08	80.9	18.27	85.1	61.77	70.3
15.4	20.22	29.0	44.00	36.2	21.09	81.4	18.22	88.3	61.79	72.0
25.4	20.20	28.7	43.97	37.5	21.08	81.7	18.08	91.2	61.77	73.6
Dec. 5.4	20.15	28.3	43.92	38.8	21.03	81.9	17.82	93.8	61.71	74.8
15.3	20.07	27.8	43.84	40.0	20.96	81.8	17.47	96.0	61.61	75.8
25.3	19.98	27.2	43.74	41.2	20.87	81.6	17.03	97.7	61.49	76.5
35.3	19.87	26.6	43.63	42.1	20.76	81.3	16.51	99.0	61.33	76.8

FIXED STARS, 1903.

(CONSTANTS OF STRUVE AND PETERS.)

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APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Arietis.		β Trianguli.		δ Ceti.		γ Trianguli.		ϵ Ceti.	
	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion South.
	h m 2 01	° ' " +23 00	h m 2 03	° ' " +34 31	h m 2 07	° ' " +8 23	h m 2 11	° ' " +33 23	h m 2 12	° ' " -6 51
Jan. 0.3	43.40	18.1	47.59	50.3	52.48	29.3	34.17	61.9	9.57	74.8
10.3	43.27	17.7	47.44	50.3	52.37	28.6	34.03	61.9	9.45	75.8
20.3	43.13	17.2	47.27	49.9	52.24	27.9	33.87	61.6	9.32	76.5
30.2	42.97	16.5	47.09	49.3	52.10	27.3	33.69	61.0	9.18	77.1
Feb. 9.2	42.82	15.7	46.90	48.4	51.95	26.7	33.51	60.2	9.03	77.5
19.2	42.66	14.8	46.72	47.3	51.81	26.1	33.32	59.2	8.88	77.7
Mar. 1.2	42.51	13.8	46.55	46.0	51.67	25.6	33.15	58.0	8.74	77.7
11.1	42.39	12.8	46.41	44.6	51.55	25.2	33.00	56.6	8.62	77.4
21.1	42.30	11.8	46.30	43.2	51.46	24.9	32.89	55.3	8.52	77.0
31.1	42.24	10.9	46.23	41.7	51.40	24.8	32.81	53.9	8.45	76.3
Apr. 10.0	42.23	10.2	46.21	40.4	51.38	24.9	32.78	52.6	8.42	75.3
20.0	42.26	9.6	46.24	39.1	51.41	25.2	32.81	51.4	8.44	74.1
30.0	42.34	9.3	46.33	38.1	51.48	25.7	32.89	50.5	8.49	72.7
May 10.0	42.47	9.2	46.47	37.3	51.59	26.5	33.02	49.8	8.60	71.1
19.9	42.65	9.4	46.66	36.9	51.75	27.5	33.20	49.3	8.74	69.3
29.9	42.87	9.8	46.90	36.7	51.94	28.7	33.43	49.2	8.93	67.3
June 8.9	43.12	10.5	47.18	36.9	52.18	30.1	33.70	49.3	9.15	65.3
18.9	43.41	11.5	47.49	37.4	52.44	31.6	34.00	49.8	9.40	63.3
28.8	43.72	12.7	47.83	38.2	52.72	33.2	34.33	50.6	9.68	61.2
July 8.8	44.04	14.1	48.17	39.3	53.02	34.9	34.67	51.7	9.96	59.2
18.8	44.36	15.7	48.53	40.6	53.32	36.7	35.02	53.0	10.26	57.3
28.7	44.68	17.3	48.88	42.2	53.62	38.4	35.37	54.4	10.56	55.6
Aug. 7.7	44.99	19.1	49.22	43.9	53.92	40.0	35.71	56.1	10.85	54.2
17.7	45.28	20.8	49.54	45.8	54.19	41.5	36.03	57.9	11.13	52.9
27.7	45.56	22.5	49.84	47.7	54.45	42.9	36.33	59.8	11.39	52.0
Sept. 6.6	45.80	24.2	50.11	49.7	54.69	44.0	36.61	61.7	11.62	51.4
16.6	46.02	25.8	50.35	51.7	54.90	45.0	36.85	63.6	11.83	51.1
26.6	46.21	27.2	50.56	53.7	55.08	45.7	37.06	65.5	12.01	51.2
Oct. 6.6	46.36	28.5	50.73	55.6	55.22	46.2	37.24	67.3	12.16	51.5
16.5	46.48	29.7	50.87	57.4	55.34	46.5	37.39	69.0	12.28	52.1
26.5	46.57	30.7	50.97	59.1	55.43	46.6	37.50	70.6	12.36	53.0
Nov. 5.5	46.63	31.5	51.04	60.6	55.49	46.5	37.57	72.0	12.42	54.0
15.4	46.66	32.2	51.07	61.9	55.52	46.3	37.61	73.3	12.45	55.1
25.4	46.65	32.7	51.06	63.1	55.52	45.9	37.62	74.4	12.44	56.3
Dec. 5.4	46.62	33.0	51.02	64.0	55.49	45.5	37.58	75.3	12.41	57.5
15.4	46.56	33.1	50.95	64.6	55.44	44.9	37.52	75.9	12.36	58.7
25.3	46.47	33.0	50.84	65.1	55.36	44.4	37.42	76.3	12.27	59.8
35.3	46.36	32.8	50.71	65.2	55.26	43.8	37.29	76.5	12.17	60.8

FIXED STARS, 1903.

(CONSTANTS OF STRUVE AND PETERS.)

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	δ Hydr.		ϵ Cassiopeiæ.		ζ^2 Ceti.		μ Hydr.		δ Ceti.	
	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion South.
	h m 2 19	° 69 05	h m 2 21	° 66 57	h m 2 22	° 8 01	h m 2 33	° 79 31	h m 2 34	° 0 05
	s	"	s	"	s	"	s	"	s	"
Jan. 0.3	61.74	83.2	7.34	72.8	61.14	29.8	43.73	78.8	31.68	27.8
10.3	61.19	84.2	6.96	73.8	61.03	29.1	42.57	79.8	31.57	28.6
20.3	60.62	84.5	6.53	74.3	60.90	28.5	41.35	80.2	31.45	29.4
30.2	60.03	84.3	6.06	74.3	60.76	27.8	40.10	79.9	31.30	30.1
Feb. 9.2	59.45	83.4	5.58	73.8	60.61	27.2	38.86	79.1	31.15	30.6
19.2	58.89	82.0	5.12	72.7	60.46	26.7	37.66	77.7	31.00	31.0
Mar. 1.2	58.37	80.1	4.68	71.1	60.31	26.2	36.54	75.8	30.85	31.2
11.1	57.90	77.8	4.30	69.2	60.18	25.9	35.51	73.4	30.71	31.2
21.1	57.50	75.0	3.99	66.9	60.08	25.6	34.60	70.6	30.60	31.1
31.1	57.17	71.9	3.77	64.4	60.01	25.5	33.85	67.5	30.52	30.8
Apr. 10.1	56.93	68.5	3.65	61.7	59.97	25.6	33.26	64.2	30.47	30.2
20.0	56.79	65.0	3.63	59.1	59.98	26.0	32.85	60.6	30.46	29.4
30.0	56.76	61.3	3.73	56.5	60.04	26.5	32.63	57.0	30.50	28.5
May 10.0	56.82	57.6	3.93	54.1	60.14	27.2	32.60	53.3	30.59	27.3
19.9	56.99	54.0	4.24	52.0	60.28	28.2	32.78	49.7	30.72	25.9
29.9	57.26	50.5	4.64	50.2	60.46	29.4	33.14	46.2	30.88	24.3
June 8.9	57.62	47.3	5.12	48.8	60.68	30.7	33.70	43.0	31.09	22.6
18.9	58.07	44.3	5.67	47.8	60.94	32.2	34.42	40.1	31.33	20.8
28.8	58.59	41.7	6.27	47.3	61.21	33.8	35.29	37.5	31.60	19.0
July 8.8	59.17	39.6	6.90	47.2	61.51	35.5	36.29	35.4	31.88	17.1
18.8	59.79	38.0	7.56	47.7	61.81	37.2	37.39	33.8	32.17	15.3
28.8	60.44	36.9	8.22	48.5	62.11	38.8	38.55	32.8	32.47	13.6
Aug. 7.7	61.09	36.4	8.87	49.8	62.40	40.4	39.75	32.3	32.76	12.1
17.7	61.72	36.5	9.50	51.5	62.69	41.9	40.94	32.4	33.04	10.8
27.7	62.33	37.2	10.09	53.5	62.95	43.2	42.09	33.2	33.31	9.6
Sept. 6.6	62.88	38.5	10.64	55.8	63.20	44.3	43.16	34.5	33.56	8.8
16.6	63.37	40.4	11.13	58.5	63.42	45.2	44.11	36.4	33.78	8.2
26.6	63.77	42.7	11.56	61.3	63.61	45.9	44.91	38.8	33.98	8.0
Oct. 6.6	64.08	45.5	11.93	64.3	63.77	46.4	45.53	41.5	34.15	8.0
16.5	64.29	48.5	12.22	67.4	63.90	46.6	45.96	44.6	34.29	8.2
26.5	64.40	51.7	12.43	70.5	64.01	46.7	46.16	47.8	34.40	8.6
Nov. 5.5	64.39	55.0	12.57	73.6	64.08	46.5	46.15	51.2	34.48	9.3
15.5	64.27	58.2	12.61	76.6	64.13	46.3	45.91	54.4	34.54	10.1
25.4	64.06	61.2	12.58	79.4	64.14	45.9	45.46	57.5	34.56	11.0
Dec. 5.4	63.75	64.0	12.45	81.9	64.13	45.4	44.81	60.3	34.55	11.9
15.4	63.36	66.3	12.25	84.2	64.08	44.8	43.98	62.6	34.51	12.8
25.3	62.89	68.1	11.97	86.0	64.01	44.2	43.01	64.5	34.45	13.8
35.3	62.38	69.4	11.61	87.4	63.92	43.6	41.91	65.8	34.36	14.7

FIXED STARS, 1903.

(CONSTANTS OF STRUVE AND PETERS.)

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APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	θ Persei.		γ Ceti.		σ Arietis.		47 Cephei.		ε Arietis.	
	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.
	h m 2 37	° +48 48	h m 2 38	° + 2 49	h m 2 46	° +14 40	h m 2 53	° +79 01	h m 2 53	° +20 57
	s	"	s	"	s	"	s	"	s	"
Jan. 0.3	36.36	75.0 ^{0.6}	17.54	33.8 ^{0.8}	9.45	56.0 ^{0.5}	17.46	80.8 ^{1.7}	41.25 ^{1.0}	9.7 ^{0.3}
10.3	36.18 ^{.18}	75.6 ^{0.3}	17.44 ^{.10}	33.0 ^{0.8}	9.35 ^{.10}	55.5 ^{0.5}	16.66 ^{0.80}	82.5 ^{1.3}	41.15 ^{.13}	9.4 ^{0.3}
20.3	35.97 ^{.21}	75.9 ^{0.1}	17.31 ^{.13}	32.2 ^{0.6}	9.22 ^{.14}	55.0 ^{0.6}	15.74 ^{1.01}	83.8 ^{0.6}	41.02 ^{.15}	9.1 ^{0.5}
30.3	35.73 ^{.24}	75.8 ^{0.6}	17.17 ^{.13}	31.6 ^{0.6}	9.08 ^{.16}	54.4 ^{0.6}	14.73 ^{1.06}	84.4 ^{0.0}	40.87 ^{.17}	8.6 ^{0.5}
Feb. 9.2	35.47 ^{.25}	75.2 ^{0.9}	17.02 ^{.16}	31.0 ^{0.4}	8.92 ^{.16}	53.8 ^{0.6}	13.67 ^{1.06}	84.4 ^{0.5}	40.70 ^{.17}	8.1 ^{0.7}
19.2	35.22 ^{.25}	74.3 ^{1.3}	16.86 ^{.15}	30.6 ^{0.3}	8.76 ^{.16}	53.2 ^{0.6}	12.61 ^{1.02}	83.9 ^{1.2}	40.53 ^{.17}	7.4 ^{0.7}
Mar. 1.2	34.97 ^{.22}	73.0 ^{1.5}	16.71 ^{.14}	30.3 ^{0.2}	8.60 ^{.14}	52.6 ^{0.5}	11.59 ^{0.92}	82.7 ^{1.7}	40.36 ^{.15}	6.7 ^{0.7}
11.2	34.75 ^{.19}	71.5 ^{1.8}	16.57 ^{.11}	30.1 ^{0.0}	8.46 ^{.13}	52.1 ^{0.5}	10.67 ^{0.80}	81.0 ^{2.1}	40.21 ^{.13}	6.0 ^{0.8}
21.1	34.56 ^{.13}	69.7 ^{1.9}	16.46 ^{.09}	30.1 ^{0.2}	8.33 ^{.09}	51.6 ^{0.4}	9.87 ^{0.63}	78.9 ^{2.5}	40.08 ^{.11}	5.2 ^{0.6}
31.1	34.43 ^{.08}	67.8 ^{1.9}	16.37 ^{.05}	30.3 ^{0.4}	8.24 ^{.06}	51.2 ^{0.3}	9.24 ^{0.45}	76.4 ^{2.7}	39.97 ^{.06}	4.6 ^{0.6}
Apr. 10.1	34.35 ^{.01}	65.9 ^{1.9}	16.32 ^{.01}	30.7 ^{0.6}	8.18 ^{.01}	50.9 ^{0.1}	8.79 ^{0.23}	73.7 ^{2.9}	39.91 ^{.02}	4.0 ^{0.5}
20.0	34.34 ^{.05}	64.0 ^{1.8}	16.31 ^{.04}	31.3 ^{0.8}	8.17 ^{.03}	50.8 ^{0.1}	8.56 ^{0.02}	70.8 ^{2.9}	39.89 ^{.03}	3.5 ^{0.3}
30.0	34.39 ^{.12}	62.2 ^{1.6}	16.35 ^{.08}	32.1 ^{1.0}	8.20 ^{.08}	50.9 ^{0.3}	8.54 ^{0.20}	67.9 ^{2.9}	39.92 ^{.08}	3.2 ^{0.0}
May 10.0	34.51 ^{.19}	60.6 ^{1.4}	16.43 ^{.13}	33.1 ^{1.2}	8.28 ^{.13}	51.2 ^{0.6}	8.74 ^{0.41}	65.0 ^{2.6}	40.00 ^{.12}	3.2 ^{0.1}
20.0	34.70 ^{.24}	59.2 ^{1.1}	16.56 ^{.16}	34.3 ^{1.4}	8.41 ^{.17}	51.8 ^{0.7}	9.15 ^{0.61}	62.4 ^{2.5}	40.12 ^{.17}	3.3 ^{0.3}
29.9	34.94 ^{.30}	58.1 ^{0.8}	16.72 ^{.21}	35.7 ^{1.5}	8.58 ^{.21}	52.5 ^{0.9}	9.76 ^{0.79}	59.9 ^{2.1}	40.29 ^{.21}	3.6 ^{0.6}
June 8.9	35.24 ^{.35}	57.3 ^{0.4}	16.93 ^{.24}	37.2 ^{1.7}	8.79 ^{.25}	53.4 ^{1.1}	10.55 ^{0.94}	57.8 ^{1.7}	40.50 ^{.25}	4.2 ^{0.8}
18.9	35.59 ^{.38}	56.9 ^{0.1}	17.17 ^{.26}	38.9 ^{1.7}	9.04 ^{.27}	54.5 ^{1.3}	11.49 ^{1.07}	56.1 ^{1.3}	40.75 ^{.28}	5.0 ^{1.0}
28.9	35.97 ^{.41}	56.8 ^{0.4}	17.43 ^{.29}	40.6 ^{1.8}	9.31 ^{.29}	55.8 ^{1.4}	12.56 ^{1.17}	54.8 ^{0.9}	41.03 ^{.29}	6.0 ^{1.1}
July 8.8	36.38 ^{.42}	57.2 ^{0.6}	17.72 ^{.29}	42.4 ^{1.8}	9.60 ^{.30}	57.2 ^{1.5}	13.73 ^{1.24}	53.9 ^{0.3}	41.32 ^{.32}	7.1 ^{1.3}
18.8	36.80 ^{.42}	57.8 ^{1.0}	18.01 ^{.30}	44.2 ^{1.6}	9.90 ^{.31}	58.7 ^{1.5}	14.97 ^{1.28}	53.6 ^{0.1}	41.64 ^{.31}	8.4 ^{1.4}
28.8	37.22 ^{.42}	58.8 ^{1.4}	18.31 ^{.29}	45.8 ^{1.6}	10.21 ^{.30}	60.2 ^{1.5}	16.25 ^{1.29}	53.7 ^{0.7}	41.95 ^{.32}	9.8 ^{1.4}
Aug. 7.7	37.64 ^{.41}	60.2 ^{1.5}	18.60 ^{.28}	47.4 ^{1.3}	10.51 ^{.30}	61.7 ^{1.5}	17.54 ^{1.28}	54.4 ^{1.0}	42.27 ^{.30}	11.2 ^{1.5}
17.7	38.05 ^{.39}	61.7 ^{1.8}	18.88 ^{.27}	48.7 ^{1.2}	10.81 ^{.28}	63.2 ^{1.3}	18.82 ^{1.23}	55.4 ^{1.6}	42.57 ^{.30}	12.7 ^{1.4}
27.7	38.44 ^{.36}	63.5 ^{2.0}	19.15 ^{.25}	49.9 ^{0.9}	11.09 ^{.26}	64.5 ^{1.3}	20.05 ^{1.17}	57.0 ^{1.9}	42.87 ^{.27}	14.1 ^{1.3}
Sept. 6.7	38.80 ^{.33}	65.5 ^{2.1}	19.40 ^{.23}	50.8 ^{0.7}	11.35 ^{.24}	65.8 ^{1.0}	21.22 ^{1.09}	58.9 ^{2.3}	43.14 ^{.25}	15.4 ^{1.3}
16.6	39.13 ^{.29}	67.6 ^{2.3}	19.63 ^{.20}	51.5 ^{0.4}	11.59 ^{.22}	66.8 ^{1.0}	22.31 ^{0.99}	61.2 ^{2.7}	43.39 ^{.23}	16.7 ^{1.1}
26.6	39.42 ^{.26}	69.9 ^{2.3}	19.83 ^{.17}	51.9 ^{0.1}	11.81 ^{.19}	67.8 ^{0.7}	23.30 ^{0.85}	63.9 ^{2.9}	43.62 ^{.20}	17.8 ^{1.0}
Oct. 6.6	39.68 ^{.22}	72.2 ^{2.3}	20.00 ^{.15}	52.0 ^{0.0}	12.00 ^{.16}	68.5 ^{0.5}	24.15 ^{0.72}	66.8 ^{3.1}	43.82 ^{.18}	18.8 ^{0.9}
16.6	39.90 ^{.17}	74.5 ^{2.3}	20.15 ^{.11}	52.0 ^{0.4}	12.16 ^{.13}	69.0 ^{0.4}	24.87 ^{0.56}	69.9 ^{3.3}	44.00 ^{.14}	19.7 ^{0.8}
26.5	40.07 ^{.13}	76.8 ^{2.3}	20.26 ^{.09}	51.6 ^{0.4}	12.29 ^{.10}	69.4 ^{0.3}	25.43 ^{0.40}	73.2 ^{3.4}	44.14 ^{.12}	20.5 ^{0.6}
Nov. 5.5	40.20 ^{.08}	79.1 ^{2.1}	20.35 ^{.06}	51.2 ^{0.6}	12.39 ^{.07}	69.7 ^{0.1}	25.83 ^{0.20}	76.6 ^{3.4}	44.26 ^{.08}	21.1 ^{0.4}
15.5	40.28 ^{.03}	81.2 ^{2.0}	20.41 ^{.03}	50.6 ^{0.8}	12.46 ^{.04}	69.8 ^{0.1}	26.03 ^{0.02}	80.0 ^{3.3}	44.34 ^{.05}	21.5 ^{0.4}
25.4	40.31 ^{.02}	83.2 ^{1.7}	20.44 ^{.01}	49.8 ^{0.8}	12.50 ^{.01}	69.7 ^{0.1}	26.05 ^{0.17}	83.3 ^{3.1}	44.39 ^{.02}	21.9 ^{0.2}
Dec. 5.4	40.29 ^{.07}	84.9 ^{1.5}	20.43 ^{.03}	49.0 ^{0.8}	12.51 ^{.02}	69.6 ^{0.2}	25.88 ^{0.37}	86.4 ^{2.9}	44.41 ^{.02}	22.1 ^{0.1}
15.4	40.22 ^{.11}	86.4 ^{1.2}	20.40 ^{.06}	48.2 ^{0.8}	12.49 ^{.06}	69.4 ^{0.4}	25.51 ^{0.55}	89.3 ^{2.5}	44.39 ^{.05}	22.2 ^{0.0}
25.4	40.11 ^{.16}	87.6 ^{0.9}	20.34 ^{.09}	47.4 ^{0.8}	12.43 ^{.08}	69.0 ^{0.4}	24.96 ^{0.72}	91.8 ^{2.1}	44.34 ^{.08}	22.2 ^{0.2}
35.3	39.95	88.5	20.25	46.6	12.35	68.6	24.24	93.9	44.26	22.0

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Ceti.			β Persei.			48 Cephei (H.).			ζ Arietis.			α Persei.		
	Right Ascension.		Declina- tion North.	Right Ascension.		Declina- tion North.	Right Ascension.		Declina- tion North.	Right Ascension.		Declina- tion North.	Right Ascension.		Declina- tion North.
	h m	s	"	h m	s	"	h m	s	"	h m	s	"	h m	s	"
	2 57		+ 3 42	3 01		+40 34	3 07		+77 22	3 09		+20 41	3 17		+49 30
Jan. 0.4	13.71		29.1	53.20		61.0	66.32		54.0	20.96		6.0	26.00		64.2
10.3	13.61	.10	28.3	53.07	.13	61.5	65.68	.04	55.9	20.86	.10	5.8	25.85	.15	65.1
20.3	13.49	.12	27.6	52.90	.17	61.7	64.92	.07	57.2	20.74	.12	5.5	25.66	.19	65.8
30.3	13.35	.14	26.9	52.71	.19	61.6	64.06	.08	58.0	20.60	.14	5.1	25.43	.23	66.0
Feb. 9.2	13.20	.15	26.4	52.50	.21	61.2	63.16	.09	58.3	20.43	.17	4.6	25.17	.26	65.9
		.16			.23			.92			.17			.27	
19.2	13.04	.16	26.0	52.27	.22	60.6	62.24		57.9	20.26	.18	4.0	24.90		65.4
Mar. 1.2	12.88		25.6	52.05		59.6	61.35	.89	56.9	20.08		3.4	24.63	.27	64.5
		.15			.20			.83			.16			.26	
11.2	12.73		25.4	51.85		58.4	60.52		55.4	19.92		2.7	24.37		63.4
		.13			.18			.73			.14			.23	
21.1	12.60		25.4	51.67		57.1	59.79	.73	53.5	19.78		2.0	24.14		61.9
		.10			.14			.59			.12			.18	
31.1	12.50		25.5	51.53		55.6	59.20		51.1	19.66		1.4	23.96		60.2
		.06			.09			.44			.08			.13	
Apr. 10.1	12.44		25.8	51.44		54.2	58.76		48.5	19.58		0.9	23.83		58.4
		.03			.04			.26			.03			.07	
20.1	12.41		26.3	51.40		52.7	58.50		45.7	19.55		0.4	23.76		56.6
		.02			.03			.07			.01			.00	
30.1	12.43		27.1	51.43		51.3	58.43		42.9	19.56		0.1	23.76		54.8
		.06			.08			.12			.06			.06	
May 10.0	12.49		28.0	51.51		50.0	58.55		40.0	19.62		0.0	23.82		53.1
		.11			.14			.31			.11			.13	
20.0	12.60		29.1	51.65		49.0	58.86		37.3	19.73		0.1	23.95		51.5
		.16			.19			.49			.16			.20	
29.9	12.76		30.4	51.84		48.2	59.35		34.8	19.89		0.4	24.15		50.2
		.19			.24			.65			.20			.26	
June 8.9	12.95		31.9	52.08		47.7	60.00		32.7	20.09		1.0	24.41		49.1
		.22			.29			.79			.23			.31	
18.9	13.17		33.5	52.37		47.5	60.79		30.8	20.32		1.7	24.72		48.3
		.26			.33			.91			.27			.35	
28.9	13.43		35.1	52.70		47.6	61.70		29.4	20.59		2.6	25.07		47.9
		.27			.34			.101			.29			.39	
July 8.8	13.70		36.8	53.04		47.9	62.71		28.4	20.88		3.7	25.46		47.8
		.29			.37			.108			.30			.41	
18.8	13.99		38.5	53.42		48.6	63.79		27.9	21.18		4.9	25.87		48.0
		.29			.38			.112			.32			.43	
28.8	14.28		40.2	53.79		49.5	64.91		27.9	21.50		6.1	26.30		48.5
		.30			.37			.114			.31			.42	
Aug. 7.8	14.58		41.6	54.16		50.6	66.05		28.3	21.81		7.5	26.72		49.3
		.29			.37			.113			.31			.43	
17.7	14.87		43.0	54.53		52.0	67.18		29.2	22.12		8.8	27.15		50.4
		.27			.35			.111			.30			.41	
27.7	15.14		44.1	54.88		53.5	68.29		30.5	22.42		10.1	27.56		51.8
		.26			.34			.107			.28			.40	
Sept. 6.7	15.40		45.0	55.22		55.1	69.36		32.3	22.70		11.4	27.96		53.3
		.24			.31			.100			.26			.37	
16.6	15.64		45.7	55.53		56.8	70.36		34.4	22.96		12.6	28.33		55.1
		.22			.29			.091			.24			.35	
26.6	15.86		46.1	55.82		58.6	71.27		36.9	23.20		13.6	28.68		57.0
		.19			.25			.081			.22			.31	
Oct. 6.6	16.05		46.3	56.07		60.5	72.08		39.6	23.42		14.5	28.99		59.0
		.16			.22			.070			.19			.27	
16.6	16.21		46.2	56.29		62.3	72.78		42.6	23.61		15.3	29.26		61.0
		.13			.18			.056			.16			.24	
26.5	16.34		46.0	56.47		64.1	73.34		45.8	23.77		16.0	29.50		63.2
		.11			.15			.042			.13			.19	
Nov. 5.5	16.45		45.5	56.62		65.8	73.76		49.0	23.90		16.5	29.69		65.3
		.08			.11			.026			.10			.14	
15.5	16.53		44.9	56.73		67.4	74.02		52.3	24.00		17.0	29.83		67.4
		.04			.07			.010			.06			.09	
25.5	16.57		44.2	56.80		69.0	74.12		55.6	24.06		17.3	29.92		69.4
		.02			.02			.008			.04			.04	
Dec. 5.4	16.59		43.4	56.82		70.3	74.04		58.7	24.10		17.4	29.96		71.2
		.01			.02			.024			.01			.01	
15.4	16.57		42.6	56.80		71.5	73.80		61.6	24.09		17.5	29.95		72.9
		.05			.07			.041			.04			.07	
25.4	16.52		41.8	56.73		72.4	73.39		64.2	24.05		17.5	29.88		74.4
		.08			.11			.056			.07			.12	
35.3	16.44		41.0	56.62		73.2	72.83		66.4	23.98		17.4	29.76		75.6

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Hydri.		β Tauri.		ε Eridani.		δ Persei.		γ Camelopardalis.	
	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.
	h m 3 18	° -77 44	h m 3 25	° +12 36	h m 3 28	° -9 46	h m 3 36	° +47 28	h m 3 40	° +71 01
	s	"	s	"	s	"	s	"	s	"
Jan. 0.4	24.07 ^{0.91}	55.0 ^{1.6}	32.46 ^{0.08}	12.7 ^{0.5}	22.86 ^{0.09}	80.2 ^{1.2}	3.28 ^{0.12}	43.5 ^{1.1}	11.48 ^{0.33}	68.1 ^{2.0}
10.3	23.16 ^{1.00}	56.6 ^{1.1}	32.38 ^{0.11}	12.2 ^{0.5}	22.77 ^{0.12}	81.4 ^{1.1}	3.16 ^{0.17}	44.6 ^{0.7}	11.15 ^{0.43}	70.1 ^{1.5}
20.3	22.16 ^{1.06}	57.7 ^{0.5}	32.27 ^{0.13}	11.8 ^{0.4}	22.65 ^{0.14}	82.5 ^{0.8}	2.99 ^{0.21}	45.3 ^{0.3}	10.72 ^{0.51}	71.6 ^{1.1}
30.3	21.10 ^{1.10}	58.2 ^{0.2}	32.14 ^{0.16}	11.2 ^{0.4}	22.51 ^{0.16}	83.3 ^{0.6}	2.78 ^{0.24}	45.6 ^{0.1}	10.21 ^{0.57}	72.7 ^{0.5}
Feb. 9.3	20.00 ^{1.09}	58.0 ^{0.6}	31.98 ^{0.17}	10.8 ^{0.5}	22.35 ^{0.18}	83.9 ^{0.4}	2.54 ^{0.26}	45.7 ^{0.4}	9.64 ^{0.60}	73.2 ^{0.1}
19.2	18.91 ^{1.06}	57.4 ^{1.3}	31.81 ^{0.17}	10.3 ^{0.5}	22.17 ^{0.18}	84.3 ^{0.1}	2.28 ^{0.26}	45.3 ^{0.6}	9.04 ^{0.60}	73.1 ^{0.5}
Mar. 1.2	17.85 ^{1.00}	56.1 ^{1.7}	31.64 ^{0.16}	9.8 ^{0.4}	21.99 ^{0.17}	84.4 ^{0.2}	2.02 ^{0.26}	44.7 ^{1.0}	8.44 ^{0.58}	72.6 ^{1.1}
11.2	16.85 ^{0.93}	54.4 ^{2.2}	31.48 ^{0.15}	9.4 ^{0.4}	21.82 ^{0.15}	84.2 ^{0.4}	1.76 ^{0.23}	43.7 ^{1.3}	7.86 ^{0.52}	71.5 ^{1.6}
21.2	15.92 ^{0.81}	52.2 ^{2.7}	31.33 ^{0.12}	9.0 ^{0.2}	21.67 ^{0.13}	83.8 ^{0.6}	1.53 ^{0.19}	42.4 ^{1.4}	7.34 ^{0.46}	69.9 ^{1.9}
31.1	15.11 ^{0.69}	49.5 ^{2.9}	31.21 ^{0.09}	8.8 ^{0.2}	21.54 ^{0.10}	83.2 ^{1.0}	1.34 ^{0.15}	41.0 ^{1.6}	6.88 ^{0.35}	68.0 ^{2.3}
Apr. 10.1	14.42 ^{0.55}	46.6 ^{3.2}	31.12 ^{0.05}	8.6 ^{0.1}	21.44 ^{0.07}	82.2 ^{1.1}	1.19 ^{0.09}	39.4 ^{1.7}	6.53 ^{0.24}	65.7 ^{2.5}
20.1	13.87 ^{0.39}	43.4 ^{3.5}	31.07 ^{0.01}	8.7 ^{0.1}	21.37 ^{0.02}	81.1 ^{1.5}	1.10 ^{0.02}	37.7 ^{1.7}	6.29 ^{0.12}	63.2 ^{2.6}
30.0	13.48 ^{0.22}	39.9 ^{3.5}	31.06 ^{0.04}	8.8 ^{0.4}	21.35 ^{0.03}	79.6 ^{1.6}	1.08 ^{0.03}	36.0 ^{1.6}	6.17 ^{0.01}	60.6 ^{2.6}
May 10.0	13.26 ^{0.05}	36.4 ^{3.6}	31.10 ^{0.09}	9.2 ^{0.5}	21.38 ^{0.07}	78.0 ^{1.8}	1.11 ^{0.11}	34.4 ^{1.5}	6.18 ^{0.15}	58.0 ^{2.5}
20.0	13.21 ^{0.12}	32.8 ^{3.6}	31.19 ^{0.14}	9.7 ^{0.8}	21.45 ^{0.11}	76.2 ^{1.9}	1.22 ^{0.17}	32.9 ^{1.3}	6.33 ^{0.27}	55.5 ^{2.5}
30.0	13.33 ^{0.30}	29.2 ^{3.4}	31.33 ^{0.17}	10.5 ^{0.9}	21.56 ^{0.16}	74.3 ^{2.1}	1.39 ^{0.23}	31.6 ^{1.1}	6.60 ^{0.38}	53.0 ^{2.1}
June 8.9	13.63 ^{0.45}	25.8 ^{3.2}	31.50 ^{0.22}	11.4 ^{1.0}	21.72 ^{0.19}	72.2 ^{2.1}	1.62 ^{0.28}	30.5 ^{0.8}	6.98 ^{0.50}	50.9 ^{1.9}
18.9	14.08 ^{0.61}	22.6 ^{3.0}	31.72 ^{0.24}	12.4 ^{1.2}	21.91 ^{0.23}	70.1 ^{2.1}	1.90 ^{0.32}	29.7 ^{0.6}	7.48 ^{0.58}	49.0 ^{1.6}
28.9	14.69 ^{0.74}	19.6 ^{2.6}	31.96 ^{0.27}	13.6 ^{1.3}	22.14 ^{0.25}	68.0 ^{2.1}	2.22 ^{0.36}	29.1 ^{0.2}	8.06 ^{0.66}	47.4 ^{1.2}
July 8.9	15.43 ^{0.86}	17.0 ^{2.1}	32.23 ^{0.29}	14.9 ^{1.4}	22.39 ^{0.27}	65.9 ^{2.0}	2.58 ^{0.39}	28.9 ^{0.1}	8.72 ^{0.72}	46.2 ^{0.7}
18.8	16.29 ^{0.94}	14.9 ^{1.6}	32.52 ^{0.29}	16.3 ^{1.3}	22.66 ^{0.28}	63.9 ^{1.7}	2.97 ^{0.41}	29.0 ^{0.4}	9.44 ^{0.77}	45.5 ^{0.3}
28.8	17.23 ^{1.00}	13.3 ^{1.1}	32.81 ^{0.30}	17.6 ^{1.4}	22.94 ^{0.29}	62.2 ^{1.6}	3.38 ^{0.41}	29.4 ^{0.6}	10.21 ^{0.79}	45.2 ^{0.0}
Aug. 7.8	18.23 ^{1.03}	12.2 ^{0.5}	33.11 ^{0.30}	19.0 ^{1.3}	23.23 ^{0.29}	60.6 ^{1.3}	3.79 ^{0.41}	30.0 ^{0.9}	11.00 ^{0.79}	45.2 ^{0.6}
17.7	19.26 ^{1.03}	11.7 ^{0.2}	33.41 ^{0.29}	20.3 ^{1.1}	23.52 ^{0.28}	59.3 ^{0.9}	4.20 ^{0.41}	30.9 ^{1.2}	11.79 ^{0.79}	45.8 ^{0.9}
27.7	20.29 ^{1.00}	11.9 ^{0.7}	33.70 ^{0.28}	21.4 ^{1.1}	23.80 ^{0.26}	58.4 ^{0.7}	4.61 ^{0.39}	32.1 ^{1.3}	12.58 ^{0.78}	46.7 ^{1.3}
Sept. 6.7	21.29 ^{0.92}	12.6 ^{1.4}	33.98 ^{0.26}	22.5 ^{0.9}	24.06 ^{0.26}	57.7 ^{0.2}	5.00 ^{0.38}	33.4 ^{1.5}	13.36 ^{0.74}	48.0 ^{1.6}
16.7	22.21 ^{0.83}	14.0 ^{1.9}	34.24 ^{0.24}	23.4 ^{0.6}	24.32 ^{0.23}	57.5 ^{0.1}	5.38 ^{0.35}	34.9 ^{1.7}	14.10 ^{0.69}	49.6 ^{2.0}
26.6	23.04 ^{0.70}	15.9 ^{2.4}	34.48 ^{0.22}	24.0 ^{0.6}	24.55 ^{0.21}	57.6 ^{0.5}	5.73 ^{0.32}	36.6 ^{1.7}	14.79 ^{0.63}	51.6 ^{2.3}
Oct. 6.6	23.74 ^{0.55}	18.3 ^{2.8}	34.70 ^{0.19}	24.6 ^{0.3}	24.76 ^{0.18}	58.1 ^{0.8}	6.05 ^{0.29}	38.3 ^{1.9}	15.42 ^{0.57}	53.9 ^{2.5}
16.6	24.29 ^{0.38}	21.1 ^{3.2}	34.89 ^{0.17}	24.9 ^{0.1}	24.94 ^{0.16}	58.9 ^{1.0}	6.34 ^{0.25}	40.2 ^{1.9}	15.99 ^{0.49}	56.4 ^{2.8}
26.6	24.67 ^{0.19}	24.3 ^{3.3}	35.06 ^{0.14}	25.0 ^{0.0}	25.10 ^{0.13}	59.9 ^{1.3}	6.59 ^{0.21}	42.1 ^{1.9}	16.48 ^{0.40}	59.2 ^{2.9}
Nov. 5.5	24.86 ^{0.01}	27.6 ^{3.3}	35.20 ^{0.11}	25.0 ^{0.1}	25.23 ^{0.10}	61.2 ^{1.5}	6.80 ^{0.16}	44.0 ^{1.9}	16.88 ^{0.30}	62.1 ^{2.9}
15.5	24.87 ^{0.19}	30.9 ^{3.4}	35.31 ^{0.08}	24.9 ^{0.2}	25.33 ^{0.06}	62.7 ^{1.5}	6.96 ^{0.12}	45.9 ^{1.9}	17.18 ^{0.20}	65.0 ^{3.0}
25.5	24.68 ^{0.38}	34.3 ^{3.1}	35.39 ^{0.05}	24.7 ^{0.3}	25.39 ^{0.03}	64.2 ^{1.6}	7.08 ^{0.07}	47.8 ^{1.8}	17.38 ^{0.07}	68.0 ^{3.0}
Dec. 5.4	24.30 ^{0.54}	37.4 ^{2.8}	35.44 ^{0.01}	24.4 ^{0.4}	25.42 ^{0.00}	65.8 ^{1.6}	7.15 ^{0.02}	49.6 ^{1.6}	17.45 ^{0.04}	71.0 ^{2.7}
15.4	23.76 ^{0.71}	40.2 ^{2.4}	35.45 ^{0.03}	24.0 ^{0.4}	25.42 ^{0.04}	67.4 ^{1.4}	7.17 ^{0.04}	51.2 ^{1.4}	17.41 ^{0.16}	73.7 ^{2.5}
25.4	23.05 ^{0.83}	42.6 ^{2.0}	35.42 ^{0.06}	23.6 ^{0.5}	25.38 ^{0.06}	68.8 ^{1.4}	7.13 ^{0.09}	52.6 ^{1.2}	17.25 ^{0.27}	76.2 ^{2.3}
35.4	22.22	44.6	35.36	23.1	25.32	70.2	7.04	53.8	16.98	78.5

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	η Tauri.		ζ Persei.		γ Hydri.		ϵ Persei.		γ Eridani.	
	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion South.
	$^{\text{h}} \text{ } ^{\text{m}}$ 3 41	$^{\circ} \text{ } '$ +23 48	$^{\text{h}} \text{ } ^{\text{m}}$ 3 48	$^{\circ} \text{ } '$ +31 35	$^{\text{h}} \text{ } ^{\text{m}}$ 3 48	$^{\circ} \text{ } '$ -74 31	$^{\text{h}} \text{ } ^{\text{m}}$ 3 51	$^{\circ} \text{ } '$ +39 43	$^{\text{h}} \text{ } ^{\text{m}}$ 3 53	$^{\circ} \text{ } '$ -13 46
	$^{\text{s}}$ "	$^{\text{s}}$ "	$^{\text{s}}$ "	$^{\text{s}}$ "	$^{\text{s}}$ "	$^{\text{s}}$ "	$^{\text{s}}$ "	$^{\text{s}}$ "	$^{\text{s}}$ "	$^{\text{s}}$ "
Jan. 0.4	44.70	18.0	3.84	44.8	46.59	90.5	22.68	48.8	31.58	74.1
10.3	44.63	18.0	3.76	45.2	45.94	92.6	22.59	49.6	31.50	75.6
20.3	44.52	17.9	3.64	45.4	45.20	94.1	22.46	50.1	31.39	76.8
30.3	44.38	17.6	3.49	45.4	44.39	95.1	22.29	50.4	31.25	77.9
Feb. 9.3	44.22	17.3	3.32	45.2	43.53	95.6	22.09	50.4	31.09	78.6
19.2	44.04	16.9	3.12	44.9	42.66	95.4	21.87	50.2	30.91	79.1
Mar. 1.2	43.85	16.4	2.92	44.4	41.79	94.7	21.64	49.7	30.72	79.2
11.2	43.67	15.8	2.72	43.7	40.94	93.4	21.42	48.9	30.54	79.1
21.2	43.50	15.2	2.53	42.9	40.15	91.6	21.21	48.0	30.37	78.6
31.1	43.36	14.5	2.38	42.0	39.43	89.4	21.03	46.8	30.22	77.9
Apr. 10.1	43.25	13.9	2.25	41.1	38.80	86.8	20.89	45.6	30.10	76.9
20.1	43.19	13.3	2.18	40.1	38.28	83.8	20.80	44.3	30.01	75.6
30.1	43.17	12.8	2.15	39.2	37.88	80.6	20.76	43.0	29.96	74.1
May 10.0	43.20	12.5	2.17	38.5	37.60	77.2	20.78	41.8	29.96	72.4
20.0	43.28	12.3	2.25	37.8	37.47	73.7	20.86	40.7	30.01	70.4
30.0	43.41	12.4	2.38	37.4	37.47	70.1	21.00	39.7	30.10	68.3
June 8.9	43.58	12.6	2.56	37.1	37.62	66.6	21.19	39.0	30.23	66.1
18.9	43.79	13.0	2.78	37.1	37.90	63.2	21.43	38.5	30.40	63.8
28.9	44.04	13.6	3.04	37.2	38.32	60.1	21.71	40.3	30.61	61.6
July 8.9	44.32	14.3	3.34	37.6	38.85	57.2	22.02	38.2	30.85	59.4
18.8	44.62	15.2	3.65	38.1	39.48	54.7	22.36	38.4	31.10	57.3
28.8	44.93	16.2	3.98	38.9	40.20	52.7	22.72	38.8	31.38	55.5
Aug. 7.8	45.24	17.3	4.31	39.7	40.98	51.2	23.09	39.5	31.67	53.8
17.8	45.56	18.4	4.65	40.7	41.80	50.3	23.46	40.3	31.96	52.5
27.7	45.87	19.5	4.98	41.8	42.63	50.0	23.82	41.3	32.24	51.6
Sept. 6.7	46.17	20.6	5.31	42.9	43.46	50.4	24.18	42.5	32.52	51.0
16.7	46.46	21.6	5.62	44.1	44.25	51.3	24.52	43.7	32.79	50.8
26.6	46.73	22.6	5.91	45.2	44.98	52.9	24.84	45.0	33.04	51.0
Oct. 6.6	46.98	23.5	6.18	46.3	45.62	55.0	25.14	46.4	33.27	51.6
16.6	47.20	24.3	6.42	47.4	46.16	57.6	25.41	47.8	33.48	52.6
26.6	47.39	25.0	6.64	48.5	46.57	60.5	25.65	49.3	33.66	53.8
Nov. 5.5	47.56	25.6	6.83	49.6	46.85	63.7	25.86	50.7	33.81	55.4
15.5	47.70	26.1	6.98	50.5	46.97	67.1	26.04	52.1	33.93	57.1
25.5	47.81	26.6	7.10	51.4	46.95	70.6	26.17	53.5	34.02	58.9
Dec. 5.5	47.87	26.9	7.18	52.2	46.77	73.9	26.25	54.8	34.08	60.8
15.4	47.90	27.2	7.21	53.0	46.45	77.0	26.29	56.0	34.10	62.7
25.4	47.89	27.4	7.20	53.6	45.99	79.8	26.28	57.1	34.08	64.4
35.4	47.84	27.5	7.15	54.1	45.41	82.1	26.22	58.0	34.02	66.0

FIXED STARS, 1903.

(CONSTANTS OF STRUBE AND PETERS.)

337

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	A ¹ Tauri.		ε Persei.		δ ¹ Eridani.		γ Tauri.		ε Tauri.	
	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.
	h m 3 56	° ' " +21 48	h m 4 01	° ' " +47 27	h m 4 07	° ' " - 7 05	h m 4 14	° ' " +15 23	h m 4 22	° ' " +18 57
Jan. 0.4	59.28	58.7	39.50	15.5	9.26	34.5	18.00	32.0	58.84	51.1
10.4	59.22	58.7	39.40	16.7	9.20	35.8	17.96	31.6	58.80	50.9
20.4	59.12	58.5	39.25	17.6	9.10	36.9	17.88	31.3	58.72	50.8
30.3	58.99	58.3	39.06	18.2	9.00	37.9	17.76	30.9	58.61	50.5
Feb. 9.3	58.84	58.1	38.83	18.4	8.83	38.6	17.61	30.6	58.46	50.3
19.3	58.66	57.7	38.57	18.4	8.66	39.1	17.44	30.2	58.29	50.0
Mar. 1.2	58.47	57.3	38.30	17.9	8.48	39.4	17.26	29.9	58.11	49.6
11.2	58.29	56.8	38.04	17.2	8.30	39.4	17.08	29.5	57.92	49.3
21.2	58.12	56.3	37.79	16.2	8.12	39.2	16.91	29.2	57.74	48.9
31.2	57.97	55.7	37.58	14.9	7.97	38.7	16.76	28.9	57.58	48.6
Apr. 10.1	57.85	55.2	37.40	13.5	7.85	38.0	16.63	28.7	57.45	48.3
20.1	57.76	54.8	37.29	11.9	7.76	37.1	16.54	28.6	57.35	48.0
30.1	57.73	54.5	37.22	10.3	7.70	35.9	16.49	28.6	57.29	47.8
May 10.0	57.74	54.2	37.23	8.7	7.70	34.5	16.49	28.7	57.28	47.7
20.0	57.81	54.2	37.30	7.2	7.73	33.0	16.53	29.0	57.32	47.8
30.0	57.92	54.2	37.44	5.8	7.81	31.2	16.62	29.4	57.40	48.0
June 9.0	58.07	54.5	37.63	4.6	7.94	29.4	16.76	30.0	57.54	48.3
18.9	58.27	54.9	37.88	3.6	8.10	27.5	16.93	30.8	57.71	48.8
28.9	58.50	55.5	38.18	2.8	8.30	25.5	17.14	31.6	57.92	49.4
July 8.9	58.76	56.3	38.53	2.4	8.53	23.5	17.38	32.6	58.16	50.2
18.9	59.05	57.1	38.90	2.2	8.78	21.7	17.65	33.6	58.42	51.0
28.8	59.35	58.1	39.29	2.3	9.05	19.9	17.93	34.6	58.71	51.9
Aug. 7.8	59.66	59.1	39.70	2.6	9.33	18.4	18.23	35.7	59.00	52.8
17.8	59.97	60.1	40.11	3.3	9.61	17.1	18.53	36.7	59.31	53.7
27.8	60.28	61.1	40.52	4.1	9.90	16.1	18.82	37.7	59.61	54.6
Sept. 6.7	60.58	62.0	40.92	5.1	10.18	15.4	19.12	38.5	59.91	55.4
16.7	60.87	62.9	41.31	6.4	10.44	15.0	19.40	39.2	60.20	56.1
26.7	61.14	63.8	41.68	7.7	10.70	15.0	19.67	39.8	60.48	56.7
Oct. 6.6	61.40	64.5	42.03	9.3	10.94	15.4	19.93	40.2	60.75	57.2
16.6	61.63	65.1	42.35	10.9	11.15	16.0	20.16	40.5	61.00	57.6
26.6	61.84	65.6	42.63	12.6	11.34	17.0	20.38	40.6	61.22	57.8
Nov. 5.6	62.03	66.0	42.88	14.4	11.51	18.2	20.57	40.6	61.42	58.0
15.5	62.18	66.4	43.09	16.1	11.65	19.6	20.73	40.5	61.60	58.0
25.5	62.30	66.6	43.24	17.9	11.76	21.1	20.86	40.3	61.74	58.1
Dec. 5.5	62.39	66.8	43.35	19.7	11.83	22.6	20.96	40.0	61.85	58.0
15.4	62.43	67.0	43.40	21.3	11.87	24.2	21.02	39.8	61.92	58.0
25.4	62.44	67.0	43.40	22.8	11.87	25.7	21.04	39.5	61.95	57.8
35.4	62.40	67.0	43.33	24.2	11.83	27.1	21.02	39.2	61.94	57.7

FIXED STARS, 1903.

(CONSTANTS OF STRUVE AND PETERS.)

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	<i>δ Mensa.</i>		<i>m Persei.</i>		<i>α Tauri. (Aldebaran.)</i>		<i>γ Tauri.</i>		<i>α Camelopardalis.</i>	
	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.
	h m 4 24	° ' " -80 26	h m 4 26	° ' " +42 51	h m 4 30	° ' " +16 18	h m 4 36	° ' " +22 46	h m 4 44	° ' " +66 10
	s "	s "	s "	s "	s "	s "	s "	s "	s "	s "
Jan. 0.4	36.11 ^{0.98}	47.3 ^{2.5}	37.62 ^{0.05}	24.3 ^{1.0}	22.95 ^{0.04}	46.6 ^{0.3}	27.18 ^{0.03}	11.0 ^{0.1}	28.44 ^{0.13}	42.4 ^{2.2}
10.4	35.13 ^{1.16}	49.8 ^{1.9}	37.57 ^{0.11}	25.3 ^{0.9}	22.91 ^{0.07}	46.3 ^{0.3}	27.15 ^{0.08}	11.1 ^{0.0}	28.31 ^{0.22}	44.6 ^{2.0}
20.4	33.97 ^{1.29}	51.7 ^{1.5}	37.46 ^{0.16}	26.2 ^{0.6}	22.84 ^{0.11}	46.0 ^{0.3}	27.07 ^{0.11}	11.1 ^{0.1}	28.09 ^{0.31}	46.6 ^{1.5}
30.3	32.68 ^{1.39}	53.2 ^{0.9}	37.30 ^{0.20}	26.8 ^{0.4}	22.73 ^{0.14}	45.7 ^{0.3}	26.96 ^{0.14}	11.0 ^{0.0}	27.78 ^{0.39}	48.1 ^{1.2}
Feb. 9.3	31.29 ^{1.46}	54.1 ^{0.3}	37.10 ^{0.22}	27.2 ^{0.1}	22.59 ^{0.17}	45.4 ^{0.3}	26.82 ^{0.17}	11.0 ^{0.2}	27.39 ^{0.44}	49.3 ^{0.7}
19.3	29.83 ^{1.47}	54.4 ^{0.2}	36.88 ^{0.25}	27.3 ^{0.2}	22.42 ^{0.18}	45.1 ^{0.3}	26.65 ^{0.19}	10.8 ^{0.3}	26.95 ^{0.47}	50.0 ^{0.2}
Mar. 1.3	28.36 ^{1.46}	54.2 ^{0.7}	36.63 ^{0.23}	27.1 ^{0.5}	22.24 ^{0.18}	44.8 ^{0.3}	26.46 ^{0.20}	10.5 ^{0.3}	26.48 ^{0.49}	50.2 ^{0.2}
11.2	26.90 ^{1.40}	53.5 ^{1.3}	36.38 ^{0.23}	26.6 ^{0.7}	22.06 ^{0.18}	44.5 ^{0.3}	26.26 ^{0.18}	10.2 ^{0.4}	25.99 ^{0.47}	50.0 ^{0.8}
21.2	25.50 ^{1.32}	52.2 ^{1.8}	36.15 ^{0.22}	25.9 ^{1.0}	21.88 ^{0.17}	44.2 ^{0.3}	26.08 ^{0.18}	9.8 ^{0.4}	25.52 ^{0.43}	49.2 ^{1.2}
31.2	24.18 ^{1.19}	50.4 ^{2.2}	35.93 ^{0.18}	24.9 ^{1.1}	21.71 ^{0.13}	43.9 ^{0.2}	25.90 ^{0.14}	9.4 ^{0.4}	25.09 ^{0.38}	48.0 ^{1.5}
Apr. 10.1	22.99 ^{1.05}	48.2 ^{2.5}	35.75 ^{0.13}	23.8 ^{1.3}	21.58 ^{0.10}	43.7 ^{0.2}	25.76 ^{0.11}	9.0 ^{0.5}	24.71 ^{0.31}	46.5 ^{1.9}
20.1	21.94 ^{0.88}	45.7 ^{2.9}	35.62 ^{0.08}	22.5 ^{1.3}	21.48 ^{0.07}	43.5 ^{0.0}	25.65 ^{0.07}	8.5 ^{0.3}	24.40 ^{0.21}	44.6 ^{2.1}
30.1	21.06 ^{0.68}	42.8 ^{3.1}	35.54 ^{0.03}	21.2 ^{1.4}	21.41 ^{0.02}	43.5 ^{0.1}	25.58 ^{0.03}	8.2 ^{0.3}	24.19 ^{0.12}	42.5 ^{2.3}
May 10.1	20.38 ^{0.47}	39.7 ^{3.3}	35.51 ^{0.04}	19.8 ^{1.2}	21.39 ^{0.03}	43.6 ^{0.2}	25.55 ^{0.03}	7.9 ^{0.2}	24.07 ^{0.02}	40.2 ^{2.4}
20.0	19.91 ^{0.26}	36.4 ^{3.5}	35.55 ^{0.10}	18.6 ^{1.2}	21.42 ^{0.08}	43.8 ^{0.3}	25.58 ^{0.07}	7.7 ^{0.0}	24.05 ^{0.09}	37.8 ^{2.4}
30.0	19.65 ^{0.03}	32.9 ^{3.4}	35.65 ^{0.16}	17.4 ^{1.1}	21.50 ^{0.12}	44.1 ^{0.5}	25.65 ^{0.12}	7.7 ^{0.1}	24.14 ^{0.20}	35.4 ^{2.2}
June 9.0	19.62 ^{0.20}	29.5 ^{3.4}	35.81 ^{0.21}	16.3 ^{0.9}	21.62 ^{0.16}	44.6 ^{0.6}	25.77 ^{0.17}	7.8 ^{0.2}	24.34 ^{0.28}	33.2 ^{2.1}
19.0	19.82 ^{0.41}	26.1 ^{3.2}	36.02 ^{0.25}	15.4 ^{0.6}	21.78 ^{0.20}	45.2 ^{0.7}	25.94 ^{0.20}	8.0 ^{0.3}	24.62 ^{0.38}	31.1 ^{2.0}
28.9	20.23 ^{0.62}	22.9 ^{3.0}	36.27 ^{0.30}	14.8 ^{0.5}	21.98 ^{0.23}	45.9 ^{0.8}	26.14 ^{0.24}	8.3 ^{0.5}	25.00 ^{0.45}	29.1 ^{1.6}
July 8.9	20.85 ^{0.81}	19.9 ^{2.7}	36.57 ^{0.33}	14.3 ^{0.2}	22.21 ^{0.26}	46.7 ^{0.9}	26.38 ^{0.26}	8.8 ^{0.6}	25.45 ^{0.51}	27.5 ^{1.4}
18.9	21.66 ^{0.97}	17.2 ^{2.3}	36.90 ^{0.35}	14.1 ^{0.0}	22.47 ^{0.27}	47.6 ^{1.0}	26.64 ^{0.28}	9.4 ^{0.7}	25.96 ^{0.58}	26.1 ^{1.0}
28.9	22.63 ^{1.12}	14.9 ^{1.8}	37.25 ^{0.37}	14.1 ^{0.2}	22.74 ^{0.29}	48.6 ^{0.9}	26.92 ^{0.30}	10.1 ^{0.7}	26.54 ^{0.60}	25.1 ^{0.7}
Aug. 7.8	23.75 ^{1.21}	13.1 ^{1.3}	37.62 ^{0.38}	14.3 ^{0.4}	23.03 ^{0.30}	49.5 ^{0.9}	27.22 ^{0.31}	10.8 ^{0.7}	27.14 ^{0.64}	24.4 ^{0.3}
17.8	24.96 ^{1.28}	11.8 ^{0.7}	38.00 ^{0.39}	14.7 ^{0.6}	23.33 ^{0.30}	50.4 ^{0.9}	27.53 ^{0.31}	11.5 ^{0.8}	27.78 ^{0.66}	24.1 ^{0.0}
27.8	26.24 ^{1.31}	11.1 ^{0.1}	38.39 ^{0.38}	15.3 ^{0.7}	23.63 ^{0.29}	51.3 ^{0.7}	27.84 ^{0.31}	12.3 ^{0.7}	28.44 ^{0.66}	24.1 ^{0.4}
Sept. 6.7	27.55 ^{1.29}	11.0 ^{0.6}	38.77 ^{0.37}	16.0 ^{0.9}	23.92 ^{0.29}	52.0 ^{0.7}	28.15 ^{0.30}	13.0 ^{0.7}	29.10 ^{0.66}	24.5 ^{0.7}
16.7	28.84 ^{1.22}	11.6 ^{1.2}	39.14 ^{0.36}	16.9 ^{1.1}	24.21 ^{0.28}	52.7 ^{0.5}	28.45 ^{0.29}	13.7 ^{0.6}	29.76 ^{0.64}	25.2 ^{1.1}
26.7	30.06 ^{1.13}	12.8 ^{1.7}	39.50 ^{0.34}	18.0 ^{1.1}	24.49 ^{0.27}	53.2 ^{0.4}	28.74 ^{0.28}	14.3 ^{0.5}	30.40 ^{0.61}	26.3 ^{1.4}
Oct. 6.7	31.19 ^{0.97}	14.5 ^{2.3}	39.84 ^{0.32}	19.1 ^{1.2}	24.76 ^{0.25}	53.6 ^{0.2}	29.02 ^{0.27}	14.8 ^{0.4}	31.01 ^{0.58}	27.7 ^{1.6}
16.6	32.16 ^{0.80}	16.8 ^{2.7}	40.16 ^{0.29}	20.3 ^{1.3}	25.01 ^{0.23}	53.8 ^{0.1}	29.29 ^{0.24}	15.2 ^{0.4}	31.59 ^{0.53}	29.3 ^{2.0}
26.6	32.96 ^{0.59}	19.5 ^{3.1}	40.45 ^{0.27}	21.6 ^{1.4}	25.24 ^{0.20}	53.9 ^{0.1}	29.53 ^{0.22}	15.6 ^{0.2}	32.12 ^{0.48}	31.3 ^{2.1}
Nov. 5.6	33.55 ^{0.35}	22.6 ^{3.2}	40.72 ^{0.22}	23.0 ^{1.4}	25.44 ^{0.18}	53.8 ^{0.1}	29.75 ^{0.19}	15.8 ^{0.3}	32.60 ^{0.40}	33.4 ^{2.4}
15.5	33.90 ^{0.10}	25.8 ^{3.4}	40.94 ^{0.18}	24.4 ^{1.4}	25.62 ^{0.15}	53.7 ^{0.2}	29.94 ^{0.16}	16.1 ^{0.2}	33.00 ^{0.33}	35.8 ^{2.5}
25.5	34.00 ^{0.15}	29.2 ^{3.4}	41.12 ^{0.14}	25.8 ^{1.5}	25.77 ^{0.11}	53.5 ^{0.2}	30.10 ^{0.13}	16.3 ^{0.1}	33.33 ^{0.24}	38.3 ^{2.6}
Dec. 5.5	33.85 ^{0.40}	32.6 ^{3.3}	41.26 ^{0.08}	27.3 ^{1.3}	25.88 ^{0.08}	53.3 ^{0.3}	30.23 ^{0.09}	16.4 ^{0.2}	33.57 ^{0.14}	40.9 ^{2.6}
15.5	33.45 ^{0.63}	35.9 ^{3.0}	41.34 ^{0.04}	28.6 ^{1.4}	25.96 ^{0.03}	53.0 ^{0.2}	30.32 ^{0.04}	16.6 ^{0.1}	33.71 ^{0.04}	43.5 ^{2.5}
25.4	32.82 ^{0.86}	38.9 ^{2.7}	41.38 ^{0.03}	30.0 ^{1.1}	25.99 ^{0.01}	52.8 ^{0.3}	30.36 ^{0.03}	16.7 ^{0.1}	33.75 ^{0.06}	46.0 ^{2.4}
35.4	31.96 ^{0.86}	41.6 ^{2.7}	41.35 ^{0.03}	31.1 ^{1.1}	25.98 ^{0.01}	52.5 ^{0.3}	30.36 ^{0.03}	16.8 ^{0.1}	33.69 ^{0.06}	48.4 ^{2.4}

FIXED STARS, 1903.

(CONSTANTS OF STRUVE AND PETERS.)

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APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	♌ Tauri.		♉ Aurigæ.		♈ Aurigæ.		♌ Orionis.		♎ Eridani.	
	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion South.
	h m 4 45	° ' " +18 40	h m 4 50	° ' " +33 00	h m 4 55	° ' " +40 55	h m 4 59	° ' " +15 15	h m 5 03	° ' " - 5 12
	s	"	s	"	s	"	s	"	s	"
Jan. 0.4	43.72	.02	42.61	.02	44.10	.02	61.1	1.0	6.50	.02
10.4	43.70	.06	42.59	.07	44.08	.08	62.1	1.0	6.48	.03
20.4	43.64	.10	42.52	.11	44.00	.12	63.1	1.0	6.43	.05
30.4	43.54	.14	42.41	.16	43.88	.18	63.8	1.0	6.33	.10
Feb. 9.3	43.40	.16	42.25	.19	43.70	.20	64.3	1.0	6.20	.13
19.3	43.24	.19	42.06	.20	43.50	.24	64.6	1.0	6.04	.18
Mar. 1.3	43.05	.19	41.86	.22	43.26	.24	64.7	1.0	5.86	.18
11.2	42.86	.18	41.64	.21	43.02	.24	64.5	1.0	5.68	.18
21.2	42.68	.17	41.43	.20	42.78	.24	64.0	1.0	5.49	.19
31.2	42.51	.15	41.23	.17	42.56	.20	63.3	1.0	5.31	.15
Apr. 10.2	42.36	.12	41.06	.13	42.36	.15	62.4	1.0	5.16	.13
20.1	42.24	.07	40.93	.09	42.21	.11	61.4	1.0	5.03	.10
30.1	42.17	.03	40.84	.04	42.10	.05	60.3	1.0	4.93	.05
May 10.1	42.14	.01	40.80	.01	42.05	.05	59.1	1.0	4.88	.01
20.1	42.15	.07	40.81	.06	42.05	.06	57.9	1.0	4.87	.03
30.0	42.22	.10	40.87	.12	42.11	.12	56.8	1.0	4.90	.16
June 9.0	42.32	.15	40.99	.16	42.23	.17	55.8	1.0	4.97	.12
19.0	42.47	.19	41.15	.21	42.40	.22	54.9	1.0	5.09	.15
28.9	42.66	.23	41.36	.24	42.62	.26	54.1	1.0	5.24	.18
July 8.9	42.89	.25	41.60	.28	42.88	.30	53.6	1.0	5.42	.22
18.9	43.14	.27	41.88	.30	43.18	.33	53.2	1.0	5.64	.24
28.9	43.41	.28	42.18	.32	43.51	.34	53.0	1.0	5.88	.25
Aug. 7.8	43.69	.30	42.50	.33	43.85	.36	52.9	1.0	6.13	.27
17.8	43.99	.30	42.83	.34	44.21	.37	53.1	1.0	6.40	.28
27.8	44.29	.30	43.17	.33	44.58	.37	53.4	1.0	6.68	.28
Sept. 6.8	44.59	.30	43.50	.34	44.95	.37	53.8	1.0	6.96	.28
16.7	44.89	.29	43.84	.33	45.32	.37	54.4	1.0	7.24	.27
26.7	45.18	.27	44.17	.31	45.69	.35	55.1	1.0	7.51	.26
Oct. 6.7	45.45	.24	44.48	.28	46.04	.33	55.8	1.0	7.77	.25
16.6	45.72	.22	44.78	.26	46.37	.31	56.7	1.0	8.02	.24
26.6	45.96	.22	45.06	.26	46.68	.29	57.7	1.0	8.26	.21
Nov. 5.6	46.18	.20	45.32	.22	46.97	.25	58.8	1.0	8.47	.19
15.6	46.38	.16	45.54	.19	47.22	.22	59.9	1.0	8.66	.16
25.5	46.54	.14	45.73	.16	47.44	.17	61.0	1.0	8.82	.13
Dec. 5.5	46.68	.09	45.89	.11	47.61	.12	62.2	1.0	8.95	.09
15.5	46.77	.05	46.00	.06	47.73	.07	63.5	1.0	9.04	.06
25.5	46.82	.01	46.06	.01	47.80	.01	64.7	1.0	9.10	.01
35.4	46.83		46.07		47.81		65.8	1.0	9.11	

FIXED STARS, 1903.

(CONSTANTS OF STRUVE AND PETERS.)

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	<i>α</i> Aurigæ. (<i>Capella</i> .)		<i>β</i> Orionis. (<i>Rigel</i> .)		<i>γ</i> Orionis.		<i>β</i> Tauri.		<i>λ</i> Aurigæ.	
	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.
	h m 5 09	° ' " +45 53	h m 5 09	° ' " - 8 18	h m 5 12	° ' " - 6 56	h m 5 20	° ' " +28 31	h m 5 26	° ' " +32 07
	s	"	s	"	s	"	s	"	s	"
Jan. 0.4	33.87	55.0	54.19	59.2	55.44	66.9	11.59	26.3	26.93	7.4
10.4	33.86	56.3	54.18	60.8	55.43	68.5	11.61	26.7	26.95	8.0
20.4	33.78	57.5	54.12	62.2	55.38	69.9	11.57	27.1	26.92	8.6
30.4	33.65	58.5	54.03	63.4	55.28	71.0	11.48	27.4	26.83	9.1
Feb. 9.3	33.47	59.3	53.90	64.4	55.16	72.0	11.35	27.6	26.70	9.5
19.3	33.25	59.8	53.74	65.1	55.00	72.7	11.19	27.8	26.53	9.8
Mar. 1.3	33.00	60.1	53.56	65.6	54.82	73.2	11.00	27.8	26.34	9.9
11.3	32.74	60.0	53.37	65.8	54.63	73.4	10.80	27.7	26.13	9.9
21.2	32.47	59.6	53.18	65.8	54.44	73.4	10.59	27.5	25.91	9.7
31.2	32.22	58.9	53.00	65.5	54.26	73.2	10.39	27.2	25.70	9.4
Apr. 10.2	32.00	58.0	52.83	64.9	54.10	72.7	10.21	26.8	25.52	8.9
20.1	31.81	56.9	52.70	64.2	53.96	72.0	10.07	26.3	25.36	8.4
30.1	31.68	55.6	52.60	63.1	53.86	71.0	9.96	25.8	25.24	7.8
May 10.1	31.60	54.3	52.53	61.9	53.80	69.8	9.89	25.2	25.17	7.1
20.1	31.59	52.8	52.51	60.5	53.78	68.5	9.87	24.7	25.14	6.4
30.0	31.63	51.4	52.54	58.9	53.80	67.0	9.90	24.3	25.17	5.8
June 9.0	31.74	50.1	52.60	57.1	53.86	65.3	9.99	23.9	25.24	5.2
19.0	31.90	48.9	52.71	55.3	53.97	63.5	10.12	23.7	25.37	4.7
29.0	32.12	47.8	52.85	53.4	54.11	61.7	10.29	23.5	25.54	4.3
July 8.9	32.38	46.8	53.03	51.5	54.29	59.9	10.50	23.4	25.75	4.0
18.9	32.69	46.1	53.24	49.6	54.49	58.1	10.74	23.5	25.99	3.8
28.9	33.02	45.5	53.47	47.9	54.72	56.4	11.00	23.6	26.26	3.7
Aug. 7.8	33.39	45.2	53.73	46.3	54.97	54.9	11.29	23.8	26.56	3.8
17.8	33.77	45.0	53.99	45.0	55.24	53.6	11.60	24.1	26.87	3.9
27.8	34.16	45.1	54.27	43.9	55.51	52.5	11.91	24.4	27.20	4.0
Sept. 6.8	34.56	45.3	54.54	43.2	55.79	51.8	12.23	24.7	27.53	4.3
16.7	34.97	45.7	54.82	42.8	56.07	51.4	12.56	25.0	27.86	4.5
26.7	35.36	46.2	55.10	42.8	56.34	51.4	12.88	25.4	28.19	4.8
Oct. 6.7	35.75	47.0	55.36	43.2	56.61	51.7	13.19	25.7	28.52	5.2
16.7	36.12	47.8	55.62	43.9	56.87	52.4	13.49	26.0	28.84	5.5
26.6	36.47	48.8	55.86	44.9	57.11	53.4	13.78	26.3	29.14	5.9
Nov. 5.6	36.79	50.0	56.08	46.2	57.33	54.6	14.05	26.6	29.42	6.3
15.6	37.08	51.2	56.27	47.8	57.53	56.1	14.30	26.9	29.68	6.7
25.5	37.33	52.6	56.44	49.5	57.70	57.8	14.51	27.2	29.91	7.2
Dec. 5.5	37.53	54.0	56.57	51.3	57.84	59.5	14.69	27.6	30.10	7.8
15.5	37.68	55.4	56.67	53.1	57.94	61.2	14.83	27.9	30.25	8.4
25.5	37.77	56.9	56.72	54.9	57.99	62.9	14.92	28.3	30.35	9.0
35.4	37.79	58.3	56.74	56.5	58.01	64.5	14.96	28.8	30.40	9.6

FIXED STARS, 1903.

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(CONSTANTS OF STRUVE AND PETERS.)

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	Groombridge 966.		δ Orionis.		α Leporis.		Groombridge 944.		ε Orionis.	
	Right Ascension.	Declination North.	Right Ascension.	Declination South.	Right Ascension.	Declination South.	Right Ascension.	Declination North.	Right Ascension.	Declination South.
	h m	° ' "	h m	° ' "	h m	° ' "	h m	° ' "	h m	° ' "
	5 26	+74 58	5 27	-0 22	5 28	-17 53	5 30	+85 08	5 31	-1 15
Jan. 0.5	51.41	45.5	4.75	24.5	28.82	41.2	69.31	54.1	19.18	59.1
10.4	51.31	48.2	4.76	25.8	28.81	43.3	68.88	57.2	19.19	60.4
20.4	51.05	50.8	4.72	26.9	28.75	45.2	67.95	60.0	19.16	61.6
30.4	50.64	53.0	4.64	27.9	28.66	46.9	66.56	62.6	19.08	62.6
Feb. 9.3	50.10	54.8	4.53	28.7	28.52	48.2	64.78	64.7	18.97	63.4
19.3	49.44	56.2	4.38	29.3	28.36	49.2	62.67	66.3	18.83	64.1
Mar. 1.3	48.71	57.1	4.21	29.7	28.17	49.9	60.34	67.4	18.66	64.6
11.3	47.94	57.4	4.03	30.0	27.97	50.2	57.87	67.9	18.47	64.8
21.2	47.16	57.2	3.84	30.0	27.76	50.2	55.38	67.7	18.29	64.9
31.2	46.40	56.5	3.66	29.9	27.56	49.9	52.96	67.0	18.10	64.8
Apr. 10.2	45.71	55.3	3.50	29.6	27.38	49.2	50.73	65.7	17.94	64.4
20.2	45.11	53.6	3.36	29.1	27.22	48.2	48.75	63.9	17.80	63.9
30.1	44.63	51.6	3.25	28.5	27.10	46.9	47.11	61.7	17.69	63.3
May 10.1	44.28	49.2	3.18	27.6	27.01	45.4	45.86	59.2	17.61	62.4
20.1	44.07	46.7	3.16	26.6	26.96	43.6	45.04	56.4	17.58	61.4
30.0	44.02	44.0	3.17	25.5	26.96	41.6	44.68	53.4	17.59	60.2
June 9.0	44.13	41.3	3.22	24.2	27.00	39.5	44.78	50.4	17.64	58.9
19.0	44.38	38.7	3.32	22.8	27.08	37.2	45.34	47.4	17.74	57.4
29.0	44.79	36.2	3.46	21.4	27.20	34.9	46.34	44.6	17.87	55.9
July 8.9	45.32	33.8	3.63	19.9	27.36	32.6	47.76	41.9	18.03	54.4
18.9	45.97	31.8	3.83	18.4	27.55	30.4	49.54	39.4	18.23	52.9
28.9	46.73	30.0	4.05	17.0	27.77	28.4	51.66	37.3	18.45	51.5
Aug. 7.9	47.57	28.5	4.30	15.7	28.02	26.5	54.07	35.5	18.69	50.2
17.8	48.48	27.4	4.56	14.6	28.27	24.9	56.70	34.2	18.95	49.0
27.8	49.44	26.6	4.82	13.7	28.55	23.7	59.52	33.2	19.21	48.1
Sept. 6.8	50.44	26.3	5.10	13.0	28.83	22.9	62.46	32.7	19.49	47.5
16.7	51.45	26.3	5.38	12.7	29.11	22.4	65.47	32.6	19.77	47.1
26.7	52.46	26.8	5.66	12.6	29.39	22.5	68.48	33.0	20.05	47.0
Oct. 6.7	53.46	27.6	5.93	12.8	29.67	23.0	71.45	33.8	20.32	47.3
16.7	54.41	28.8	6.20	13.3	29.94	23.9	74.30	35.1	20.58	47.8
26.7	55.32	30.4	6.45	14.1	30.19	25.2	76.97	36.8	20.84	48.6
Nov. 5.6	56.14	32.4	6.68	15.1	30.43	26.9	79.41	38.9	21.08	49.7
15.6	56.87	34.6	6.89	16.3	30.64	28.9	81.54	41.4	21.29	50.9
25.6	57.49	37.1	7.08	17.6	30.82	31.1	83.31	44.2	21.48	52.3
Dec. 5.5	57.97	39.9	7.24	19.0	30.96	33.4	84.66	47.2	21.64	53.8
15.5	58.31	42.7	7.35	20.4	31.07	35.7	85.55	50.4	21.76	55.2
25.5	58.48	45.6	7.43	21.8	31.14	38.0	85.94	53.6	21.84	56.7
35.4	58.49	48.5	7.47	23.1	31.15	40.2	85.82	56.8	21.88	58.0

FIXED STARS, 1903.

(CONSTANTS OF STRUVE AND PETERS.)

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Columbae.		κ Orionis.		δ Doradus.		ν Aurigae.		α Orionis.	
	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.
	h m 5 36	° ' " -34 07	h m 5 43	° ' " -9 42	h m 5 44	° ' " -65 46	h m 5 44	° ' " +39 07	h m 5 49	° ' " +7 23
Jan. 0.5	10.03	45.2	11.08	24.9	39.05	32.5	48.30	6.2	57.00	11.4
10.4	10.00	48.0	11.09	26.7	38.87	35.8	48.34	7.2	57.03	10.5
20.4	9.92	50.5	11.06	28.3	38.59	38.8	48.32	8.2	57.02	9.8
30.4	9.80	52.7	10.99	29.7	38.23	41.4	48.24	9.1	56.96	9.1
Feb. 9.4	9.63	54.4	10.88	30.9	37.80	43.6	48.11	9.9	56.87	8.6
19.3	9.42	55.8	10.73	31.8	37.30	45.3	47.93	10.5	56.73	8.2
Mar. 1.3	9.19	56.7	10.56	32.4	36.76	46.5	47.73	10.9	56.57	7.9
11.3	8.95	57.2	10.37	32.8	36.20	47.1	47.50	11.1	56.39	7.7
21.2	8.70	57.2	10.17	32.8	35.62	47.1	47.26	11.0	56.21	7.6
31.2	8.45	56.7	9.98	32.7	35.06	46.6	47.02	10.8	56.02	7.6
Apr. 10.2	8.23	55.8	9.81	32.2	34.52	45.6	46.81	10.3	55.85	7.8
20.2	8.02	54.6	9.65	31.5	34.03	44.1	46.62	9.6	55.71	8.0
30.1	7.85	52.9	9.53	30.6	33.58	42.2	46.48	8.8	55.59	8.3
May 10.1	7.72	50.9	9.44	29.4	33.21	39.8	46.38	7.9	55.50	8.8
20.1	7.64	48.6	9.39	28.0	32.91	37.1	46.33	6.9	55.46	9.4
30.1	7.60	46.0	9.38	26.5	32.69	34.1	46.33	5.9	55.46	10.1
June 9.0	7.61	43.3	9.42	24.8	32.56	30.8	46.39	4.9	55.50	10.9
19.0	7.67	40.4	9.49	22.9	32.53	27.4	46.50	4.0	55.58	11.8
29.0	7.78	37.6	9.61	21.0	32.58	24.0	46.66	3.1	55.70	12.7
July 8.9	7.92	34.7	9.76	19.1	32.73	20.7	46.87	2.3	55.86	13.7
18.9	8.11	31.9	9.94	17.3	32.96	17.4	47.11	1.7	56.05	14.7
28.9	8.33	29.4	10.15	15.5	33.28	14.4	47.39	1.1	56.26	15.7
Aug. 7.9	8.58	27.1	10.38	13.9	33.66	11.8	47.70	0.7	56.50	16.7
17.8	8.86	25.2	10.63	12.5	34.11	9.5	48.02	0.4	56.75	17.5
27.8	9.15	23.7	10.89	11.4	34.61	7.8	48.37	0.3	57.02	18.1
Sept. 6.8	9.46	22.7	11.16	10.7	35.14	6.6	48.72	0.2	57.29	18.6
16.8	9.77	22.2	11.44	10.2	35.70	6.1	49.08	0.2	57.57	18.9
26.7	10.08	22.3	11.72	10.2	36.27	6.2	49.44	0.4	57.86	19.0
Oct. 6.7	10.39	22.9	11.99	10.6	36.82	6.9	49.81	0.6	58.14	18.8
16.7	10.69	24.1	12.26	11.3	37.36	8.3	50.16	0.9	58.42	18.4
26.6	10.96	25.8	12.52	12.4	37.85	10.3	50.50	1.4	58.69	17.8
Nov. 5.6	11.22	27.9	12.76	13.8	38.28	12.8	50.82	1.9	58.94	17.1
15.6	11.44	30.5	12.99	15.4	38.64	15.7	51.12	2.6	59.18	16.2
25.6	11.63	33.2	13.18	17.2	38.93	19.0	51.39	3.3	59.39	15.2
Dec. 5.5	11.78	36.2	13.35	19.2	39.11	22.5	51.62	4.2	59.57	14.2
15.5	11.89	39.2	13.47	21.1	39.20	26.1	51.80	5.1	59.72	13.1
25.5	11.94	42.2	13.56	23.1	39.19	29.7	51.93	6.1	59.83	12.1
35.5	11.95	45.1	13.60	24.9	39.07	33.2	52.00	7.2	59.89	11.2

FIXED STARS, 1903.

(CONSTANTS OF STRUVE AND PETERS.)

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APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	β Aurigæ.		θ Aurigæ.		ν Orionis.		22 Camelop. (H.).		γ Geminorum.	
	Right Ascension.	Declina- tion North	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.
	h m 5 52	° ' " +44 56	h m 5 53	° ' " +37 12	h m 6 02	° ' " +14 46	h m 6 08	° ' " +69 20	h m 6 09	° ' " +22 31
Jan. 0.5	27.34	9.3	8.64	14.0	3.89	39.3	14.22	68.5	3.32	57.0
10.4	27.39	10.6	8.69	14.9	3.94	38.9	14.28	71.1	3.38	57.0
20.4	27.37	11.9	8.68	15.8	3.94	38.5	14.22	73.6	3.39	57.1
30.4	27.29	13.1	8.62	16.6	3.90	38.2	14.03	75.9	3.35	57.2
Feb. 9.4	27.15	14.2	8.50	17.4	3.81	38.0	13.73	77.9	3.26	57.4
19.3	26.96	15.0	8.33	18.0	3.68	37.8	13.33	79.6	3.13	57.5
Mar. 1.3	26.73	15.6	8.14	18.4	3.52	37.7	12.85	80.9	2.97	57.7
11.3	26.48	15.9	7.91	18.6	3.34	37.7	12.32	81.8	2.79	57.8
21.3	26.22	16.0	7.68	18.6	3.15	37.6	11.76	82.1	2.59	57.8
31.2	25.96	15.7	7.46	18.5	2.97	37.6	11.20	81.9	2.39	57.8
Apr. 10.2	25.72	15.2	7.24	18.1	2.79	37.6	10.66	81.2	2.21	57.7
20.2	25.50	14.5	7.06	17.5	2.63	37.7	10.18	80.1	2.04	57.6
30.1	25.33	13.5	6.91	16.8	2.51	37.8	9.76	78.6	1.91	57.5
May 10.1	25.21	12.4	6.81	16.0	2.42	38.0	9.44	76.7	1.81	57.3
20.1	25.14	11.1	6.75	15.1	2.37	38.2	9.21	74.6	1.75	57.2
30.1	25.14	9.8	6.75	14.2	2.36	38.5	9.09	72.2	1.74	57.1
June 9.1	25.19	8.5	6.80	13.3	2.39	38.8	9.08	69.8	1.77	57.0
19.0	25.30	7.2	6.90	12.5	2.47	39.3	9.19	67.3	1.84	56.9
29.0	25.46	6.0	7.05	11.7	2.58	39.8	9.40	64.8	1.96	57.0
July 9.0	25.67	4.9	7.24	11.0	2.74	40.3	9.72	62.5	2.11	57.0
18.9	25.92	3.9	7.47	10.4	2.92	40.9	10.12	60.2	2.30	57.1
28.9	26.21	3.0	7.73	9.9	3.13	41.5	10.62	58.2	2.52	57.3
Aug. 7.9	26.54	2.3	8.03	9.4	3.37	42.0	11.18	56.4	2.76	57.5
17.8	26.89	1.7	8.34	9.2	3.62	42.5	11.81	54.9	3.02	57.6
27.8	27.26	1.3	8.67	9.0	3.89	42.9	12.49	53.6	3.30	57.7
Sept. 6.8	27.64	1.1	9.02	8.8	4.17	43.2	13.20	52.8	3.59	57.8
16.8	28.03	1.0	9.37	8.8	4.46	43.3	13.95	52.2	3.89	57.8
26.7	28.43	1.0	9.72	8.8	4.75	43.3	14.71	52.0	4.20	57.7
Oct. 6.7	28.82	1.2	10.08	9.0	5.05	43.2	15.47	52.1	4.51	57.6
16.7	29.21	1.6	10.42	9.2	5.34	42.9	16.22	52.7	4.82	57.4
26.7	29.58	2.1	10.76	9.5	5.62	42.5	16.95	53.6	5.11	57.1
Nov. 5.6	29.94	2.8	11.08	9.8	5.89	41.9	17.64	54.8	5.40	56.8
15.6	30.27	3.6	11.38	10.3	6.15	41.3	18.27	56.4	5.68	56.5
25.6	30.57	4.6	11.65	10.9	6.38	40.7	18.84	58.3	5.92	56.3
Dec. 5.5	30.82	5.8	11.88	11.6	6.58	40.0	19.32	60.5	6.14	56.0
15.5	31.02	7.0	12.07	12.4	6.74	39.4	19.70	62.9	6.32	55.8
25.5	31.17	8.3	12.21	13.3	6.87	38.8	19.97	65.4	6.46	55.7
35.5	31.26	9.7	12.29	14.2	6.95	38.3	20.11	68.1	6.55	55.7

FIXED STARS, 1903.

(CONSTANTS OF STRUVE AND PETERS.)

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	μ Geminorum.		ψ Aurigæ.		α Argus. (Canopus.)		ν Geminorum.		γ Geminorum.	
	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.
	h m	° '	h m	° '	h m	° '	h m	° '	h m	° '
	6 17	+22 33	6 17	+49 19	6 21	-52 38	6 23	+20 16	6 32	+16 28
	s	"	s	"	s	"	s	"	s	"
Jan. 0.5	7.49	39.3	28.42	67.0	50.41	44.5	14.12	15.5	8.38	45.7
10.5	7.56	39.3	28.50	68.6	50.39	48.0	14.20	15.4	8.46	45.3
20.4	7.58	39.4	28.51	70.2	50.29	51.2	14.22	15.3	8.49	45.0
30.4	7.54	39.5	28.45	71.7	50.13	54.1	14.20	15.3	8.48	44.8
Feb. 9.4	7.46	39.6	28.32	73.1	49.91	56.7	14.12	15.3	8.41	44.6
19.4	7.34	39.8	28.14	74.3	49.63	58.8	14.00	15.4	8.30	44.6
Mar. 1.3	7.18	40.0	27.90	75.2	49.32	60.4	13.85	15.5	8.15	44.6
11.3	7.00	40.1	27.64	75.8	48.97	61.4	13.67	15.6	7.98	44.6
21.3	6.81	40.2	27.35	76.1	48.61	62.0	13.48	15.7	7.80	44.7
31.2	6.61	40.2	27.06	76.1	48.24	62.1	13.29	15.8	7.61	44.8
Apr. 10.2	6.42	40.2	26.79	75.8	47.89	61.6	13.10	15.8	7.42	44.9
20.2	6.25	40.1	26.54	75.1	47.56	60.6	12.93	15.8	7.26	45.0
30.2	6.11	40.0	26.34	74.2	47.25	59.2	12.79	15.8	7.12	45.1
May 10.1	6.01	39.8	26.17	73.1	46.99	57.3	12.69	15.7	7.01	45.2
20.1	5.95	39.7	26.07	71.8	46.78	55.0	12.62	15.7	6.93	45.3
30.1	5.92	39.6	26.02	70.3	46.63	52.4	12.59	15.7	6.90	45.5
June 9.1	5.95	39.5	26.04	68.8	46.53	49.5	12.61	15.7	6.91	45.8
19.0	6.01	39.4	26.12	67.2	46.49	46.4	12.67	15.8	6.96	46.0
29.0	6.12	39.4	26.25	65.7	46.51	43.2	12.77	15.9	7.05	46.4
July 9.0	6.27	39.5	26.44	64.2	46.60	39.9	12.91	16.1	7.17	46.7
18.9	6.45	39.6	26.68	62.8	46.74	36.8	13.08	16.3	7.33	47.1
28.9	6.66	39.6	26.97	61.6	46.93	33.7	13.28	16.5	7.52	47.4
Aug. 7.9	6.90	39.8	27.29	60.4	47.18	30.9	13.51	16.7	7.74	47.8
17.9	7.15	39.8	27.64	59.4	47.47	28.4	13.76	16.8	7.97	48.0
27.8	7.43	39.9	28.02	58.6	47.80	26.4	14.02	16.9	8.23	48.2
Sept. 6.8	7.72	39.9	28.42	58.0	48.16	24.9	14.31	17.0	8.50	48.3
16.8	8.02	39.8	28.84	57.5	48.55	23.9	14.60	16.9	8.78	48.3
26.8	8.32	39.7	29.26	57.3	48.95	23.6	14.90	16.8	9.08	48.1
Oct. 6.7	8.63	39.5	29.70	57.2	49.35	23.9	15.20	16.9	9.37	47.8
16.7	8.94	39.3	30.12	57.3	49.75	24.9	15.51	16.2	9.67	47.4
26.7	9.24	39.0	30.54	57.6	50.14	26.4	15.81	15.8	9.97	46.8
Nov. 5.6	9.54	38.6	30.95	58.2	50.50	28.6	16.10	15.3	10.26	46.2
15.6	9.81	38.2	31.33	59.0	50.82	31.2	16.38	14.8	10.54	45.5
25.6	10.07	37.9	31.67	60.0	51.10	34.2	16.64	14.4	10.79	44.8
Dec. 5.6	10.30	37.6	31.98	61.2	51.32	37.5	16.86	13.9	11.02	44.1
15.5	10.48	37.4	32.23	62.5	51.48	41.0	17.05	13.5	11.22	43.4
25.5	10.63	37.3	32.42	64.0	51.57	44.6	17.20	13.2	11.37	42.9
35.5	10.73	37.3	32.55	65.6	51.59	48.1	17.31	13.0	11.48	42.4

FIXED STARS, 1903.

(CONSTANTS OF STRUVE AND PETERS.)

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APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	ϵ Geminorum.		ψ^5 Aurigæ.		α Canis Majoris. (Sirius.)		θ Geminorum.		ζ Mensæ.	
	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion South.
	h m 6 37	° ' " +25 13	h m 6 39	° ' " +43 40	h m 6 40	° ' " -16 34	h m 6 46	° ' " +34 04	h m 6 47	° ' " -80 42
Jan. 0.5	59.84	28.2	47.36	16.7	54.19	68.0	25.92	31.5	76.16	50.2
10.5	59.93	28.3	47.47	18.0	54.25	70.3	26.02	32.1	75.90	53.7
20.5	59.97	28.5	47.51	19.3	54.26	72.5	26.07	32.8	75.38	57.2
30.4	59.95	28.8	47.48	20.6	54.22	74.5	26.07	33.6	74.63	60.4
Feb. 9.4	59.89	29.1	47.40	21.8	54.14	76.2	26.00	34.4	73.66	63.3
19.4	59.78	29.4	47.26	22.9	54.02	77.6	25.89	35.2	72.51	65.8
Mar. 1.3	59.63	29.7	47.07	23.9	53.86	78.8	25.73	35.8	71.22	67.8
11.3	59.45	30.0	46.84	24.6	53.68	79.5	25.54	36.4	69.81	69.4
21.3	59.26	30.2	46.59	25.1	53.49	80.0	25.32	36.8	68.33	70.4
31.3	59.06	30.4	46.34	25.3	53.28	80.1	25.11	37.0	66.82	71.0
Apr. 10.2	58.86	30.4	46.09	25.2	53.09	79.9	24.89	37.0	65.31	71.0
20.2	58.68	30.4	45.86	24.9	52.90	79.4	24.69	36.9	63.84	70.5
30.2	58.53	30.3	45.66	24.3	52.74	78.6	24.52	36.6	62.45	69.5
May 10.1	58.41	30.1	45.50	23.5	52.60	77.3	24.38	36.2	61.16	68.0
20.1	58.33	29.9	45.39	22.5	52.50	76.2	24.28	35.6	60.02	66.1
30.1	58.29	29.7	45.33	21.4	52.44	74.6	24.23	35.0	59.03	63.8
June 9.1	58.29	29.4	45.32	20.2	52.42	72.8	24.22	34.3	58.23	61.1
19.0	58.34	29.2	45.37	19.0	52.43	70.9	24.26	33.5	57.63	58.2
29.0	58.43	29.0	45.47	17.7	52.49	68.9	24.35	32.8	57.26	55.1
July 9.0	58.56	28.8	45.62	16.5	52.58	66.8	24.48	32.1	57.11	51.9
19.0	58.72	28.6	45.82	15.3	52.70	64.8	24.65	31.4	57.19	48.7
28.9	58.92	28.5	46.05	14.1	52.86	62.8	24.85	30.7	57.51	45.5
Aug. 7.9	59.14	28.4	46.32	13.1	53.05	61.0	25.08	30.0	58.05	42.6
17.9	59.39	28.2	46.62	12.1	53.26	59.4	25.35	29.4	58.81	39.9
27.9	59.66	28.0	46.95	11.2	53.49	58.1	25.63	28.9	59.75	37.5
Sept. 6.8	59.94	27.8	47.30	10.5	53.74	57.2	25.94	28.3	60.85	35.6
16.8	60.24	27.6	47.67	9.9	54.01	56.6	26.26	27.8	62.08	34.3
26.8	60.55	27.2	48.05	9.4	54.28	56.4	26.59	27.3	63.40	33.6
Oct. 6.7	60.87	26.9	48.44	9.0	54.57	56.7	26.94	26.9	64.77	33.4
16.7	61.18	26.5	48.84	8.8	54.86	57.5	27.28	26.5	66.13	34.0
26.7	61.50	26.1	49.23	8.8	55.14	58.6	27.63	26.2	67.45	35.1
Nov. 5.7	61.81	25.7	49.61	8.9	55.42	60.2	27.97	26.0	68.66	36.9
15.6	62.11	25.3	49.97	9.2	55.68	62.1	28.30	25.9	69.74	39.2
25.6	62.38	25.0	50.31	9.7	55.92	64.3	28.60	25.9	70.62	42.0
Dec. 3.6	62.63	24.7	50.61	10.4	56.13	66.6	28.88	26.1	71.29	45.2
13.6	62.89	24.6	50.87	11.4	56.31	69.1	29.12	26.4	71.72	48.6
23.5	63.02	24.6	51.08	12.4	56.44	71.5	29.32	26.9	71.89	52.1
33.5	63.14	24.6	51.23	13.6	56.53	74.0	29.46	27.5	71.79	55.7

FIXED STARS, 1903.

(CONSTANTS OF STRUVE AND PETERS.)

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	ϵ Canis Majoris.		ζ Geminorum.		δ Canis Majoris.		63 Aurigæ.		γ^2 Volantis.	
	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion South.
	h m 6 54	° ' " -28 50	h m 6 58	° ' " +20 42	h m 7 04	° ' " -26 14	h m 7 04	° ' " +39 28	h m 7 09	° ' " -70 20
Jan. 0.5	50.76	33.3	23.26	34.8	28.71	29.9	61.28	32.5	38.72	36.2
10.5	50.82	36.2	23.37	34.5	28.79	32.7	61.42	33.4	38.72	39.9
20.5	50.84	39.0	23.43	34.4	28.82	35.4	61.49	34.5	38.58	43.5
30.4	50.80	41.5	23.44	34.5	28.79	37.9	61.50	35.6	38.33	47.0
Feb. 9.4	50.71	43.7	23.39	34.6	28.72	40.1	61.45	36.7	37.96	50.1
19.4	50.57	45.6	23.30	34.8	28.60	41.9	61.34	37.8	37.50	52.9
Mar. 1.4	50.40	47.1	23.17	35.0	28.44	43.4	61.19	38.7	36.95	55.2
11.3	50.20	48.2	23.00	35.2	28.25	44.6	60.99	39.6	36.34	57.1
21.3	49.98	48.9	22.82	35.4	28.04	45.3	60.77	40.2	35.68	58.5
31.3	49.75	49.2	22.63	35.6	27.82	45.6	60.54	40.6	34.99	59.3
Apr. 10.2	49.53	49.0	22.44	35.8	27.61	45.6	60.30	40.7	34.30	59.6
20.2	49.32	48.5	22.26	35.9	27.40	45.1	60.09	40.7	33.63	59.3
30.2	49.12	47.6	22.11	36.0	27.21	44.3	59.89	40.4	32.98	58.6
May 10.2	48.96	46.3	21.98	36.0	27.05	43.2	59.73	39.9	32.38	57.3
20.1	48.83	44.7	21.89	36.0	26.92	41.7	59.60	39.2	31.85	55.6
30.1	48.73	42.8	21.84	36.0	26.83	39.9	59.52	38.4	31.39	53.4
June 9.1	48.68	40.7	21.82	36.0	26.77	37.9	59.50	37.4	31.02	50.9
19.1	48.67	38.3	21.85	36.1	26.75	35.7	59.51	36.4	30.74	48.0
29.0	48.70	35.8	21.92	36.1	26.77	33.3	59.58	35.4	30.56	44.9
July 9.0	48.76	33.3	22.02	36.1	26.84	30.9	59.69	34.3	30.49	41.7
19.0	48.87	30.7	22.16	36.1	26.94	28.4	59.85	33.2	30.53	38.4
29.0	49.01	28.2	22.33	36.2	27.07	26.0	60.04	32.1	30.67	35.1
Aug. 7.9	49.19	25.9	22.53	36.2	27.24	23.8	60.28	31.1	30.92	32.0
17.9	49.40	23.8	22.75	36.1	27.43	21.8	60.54	30.1	31.28	29.1
27.9	49.63	22.1	23.00	36.0	27.66	20.1	60.83	29.2	31.72	26.6
Sept. 6.8	49.89	20.7	23.26	35.8	27.90	18.8	61.14	28.3	32.24	24.5
16.8	50.16	19.8	23.54	35.5	28.17	17.9	61.47	27.5	32.84	23.0
26.8	50.46	19.4	23.83	35.1	28.46	17.5	61.82	26.8	33.48	22.0
Oct. 6.8	50.76	19.6	24.14	34.6	28.75	17.6	62.19	26.1	34.16	21.6
16.7	51.07	20.2	24.45	34.0	29.06	18.2	62.56	25.6	34.85	21.9
26.7	51.37	21.4	24.76	33.4	29.36	19.3	62.93	25.2	35.53	22.9
Nov. 5.7	51.67	23.1	25.06	32.7	29.66	20.9	63.30	24.9	36.18	24.5
15.7	51.95	25.2	25.36	32.0	29.94	22.9	63.66	24.8	36.78	26.7
25.6	52.21	27.6	25.64	31.4	30.21	25.3	64.00	24.9	37.30	29.4
Dec. 5.6	52.44	30.3	25.90	30.8	30.44	27.9	64.31	25.2	37.73	32.6
15.6	52.63	33.2	26.13	30.3	30.64	30.7	64.59	25.7	38.05	36.0
25.5	52.78	36.2	26.31	29.8	30.80	33.6	64.81	26.4	38.25	39.7
35.5	52.88	39.2	26.45	29.6	30.91	36.5	64.99	27.3	38.33	43.4

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	25 Camelop. (H.).		δ Geminorum.		Piazzi vii, 67.		β Canis Minoris.		α² Geminorum. (Castor.)	
	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.
	h m 7 10	° ' " +82 35	h m 7 14	° ' " +22 09	h m 7 20	° ' " +68 39	h m 7 21	° ' " + 8 28	h m 7 28	° ' " +32 05
	s "	s "	s "	s "	s "	s "	s "	s "	s "	s "
Jan. 0.5	53.09 ^{0.48}	44.9 ^{3.0}	21.72 ^{0.13}	28.3 ^{0.2}	51.57 ^{0.25}	37.5 ^{2.4}	55.22 ^{0.13}	54.7 ^{1.1}	26.66 ^{0.16}	53.2 ^{0.3}
10.5	53.57 ^{0.14}	47.9 ^{3.0}	21.85 ^{0.07}	28.1 ^{0.0}	51.82 ^{0.13}	39.9 ^{2.5}	55.35 ^{0.07}	53.6 ^{0.9}	26.82 ^{0.10}	53.5 ^{0.6}
20.5	53.71 ^{0.22}	50.9 ^{3.0}	21.92 ^{0.04}	28.1 ^{0.1}	51.95 ^{0.03}	42.4 ^{2.6}	55.42 ^{0.02}	52.7 ^{0.7}	26.92 ^{0.03}	54.1 ^{0.7}
30.5	53.49 ^{0.55}	53.9 ^{2.9}	21.94 ^{0.03}	28.2 ^{0.2}	51.95 ^{0.00}	45.0 ^{2.5}	55.44 ^{0.02}	52.0 ^{0.6}	26.95 ^{0.02}	54.8 ^{0.8}
Feb. 9.4	52.94 ^{0.85}	56.8 ^{2.6}	21.91 ^{0.08}	28.4 ^{0.3}	51.82 ^{0.24}	47.5 ^{2.3}	55.42 ^{0.07}	51.4 ^{0.4}	26.93 ^{0.07}	55.6 ^{0.8}
19.4	52.09 ^{1.13}	59.4 ^{2.2}	21.83 ^{0.12}	28.7 ^{0.3}	51.58 ^{0.35}	49.8 ^{2.0}	55.35 ^{0.11}	51.0 ^{0.3}	26.86 ^{0.13}	56.4 ^{0.8}
Mar. 1.4	50.96 ^{1.34}	61.6 ^{1.7}	21.71 ^{0.15}	29.0 ^{0.4}	51.23 ^{0.43}	51.8 ^{1.6}	55.24 ^{0.15}	50.7 ^{0.1}	26.73 ^{0.16}	57.2 ^{0.7}
11.3	49.62 ^{1.49}	63.3 ^{1.2}	21.56 ^{0.18}	29.4 ^{0.3}	50.80 ^{0.49}	53.4 ^{1.2}	55.09 ^{0.16}	50.6 ^{0.1}	26.57 ^{0.19}	57.9 ^{0.6}
21.3	48.13 ^{1.58}	64.5 ^{0.7}	21.38 ^{0.19}	29.7 ^{0.3}	50.31 ^{0.52}	54.6 ^{0.8}	54.93 ^{0.18}	50.6 ^{0.1}	26.38 ^{0.20}	58.5 ^{0.5}
31.3	46.55 ^{1.60}	65.2 ^{0.0}	21.19 ^{0.19}	30.0 ^{0.2}	49.79 ^{0.54}	55.4 ^{0.3}	54.75 ^{0.18}	50.7 ^{0.2}	26.18 ^{0.21}	59.0 ^{0.3}
Apr. 10.3	44.95 ^{1.55}	65.2 ^{0.5}	21.00 ^{0.18}	30.2 ^{0.1}	49.25 ^{0.52}	55.7 ^{0.3}	54.57 ^{0.17}	50.9 ^{0.3}	25.97 ^{0.20}	59.3 ^{0.2}
20.2	43.40 ^{1.45}	64.7 ^{1.0}	20.82 ^{0.16}	30.3 ^{0.2}	48.73 ^{0.49}	55.4 ^{0.7}	54.40 ^{0.15}	51.2 ^{0.3}	25.77 ^{0.18}	59.5 ^{0.0}
30.2	41.95 ^{1.30}	63.7 ^{1.6}	20.66 ^{0.14}	30.5 ^{0.0}	48.24 ^{0.42}	54.7 ^{1.1}	54.25 ^{0.14}	51.5 ^{0.4}	25.59 ^{0.16}	59.5 ^{0.1}
May 10.2	40.65 ^{1.08}	62.1 ^{2.0}	20.52 ^{0.10}	30.5 ^{0.0}	47.82 ^{0.36}	53.6 ^{1.5}	54.11 ^{0.10}	51.9 ^{0.5}	25.43 ^{0.13}	59.4 ^{0.3}
20.2	39.57 ^{0.85}	60.1 ^{2.4}	20.42 ^{0.07}	30.5 ^{0.0}	47.46 ^{0.26}	52.1 ^{1.9}	54.01 ^{0.07}	52.4 ^{0.5}	25.30 ^{0.08}	59.1 ^{0.5}
30.1	38.72 ^{0.58}	57.7 ^{2.6}	20.35 ^{0.03}	30.5 ^{0.1}	47.20 ^{0.18}	50.2 ^{2.2}	53.94 ^{0.03}	52.9 ^{0.6}	25.22 ^{0.05}	58.6 ^{0.5}
June 9.1	38.14 ^{0.31}	55.1 ^{2.9}	20.32 ^{0.01}	30.4 ^{0.1}	47.02 ^{0.08}	48.0 ^{2.3}	53.91 ^{0.00}	53.5 ^{0.7}	25.17 ^{0.00}	58.1 ^{0.6}
19.1	37.83 ^{0.02}	52.2 ^{3.0}	20.33 ^{0.01}	30.3 ^{0.1}	46.94 ^{0.03}	45.7 ^{2.5}	53.91 ^{0.04}	54.2 ^{0.6}	25.17 ^{0.04}	57.5 ^{0.6}
29.0	37.81 ^{0.27}	49.2 ^{3.0}	20.39 ^{0.06}	30.2 ^{0.1}	46.97 ^{0.12}	43.2 ^{2.6}	53.95 ^{0.07}	54.8 ^{0.7}	25.21 ^{0.08}	56.9 ^{0.7}
July 9.0	38.08 ^{0.55}	46.2 ^{3.1}	20.48 ^{0.12}	30.1 ^{0.1}	47.09 ^{0.22}	40.6 ^{2.5}	54.02 ^{0.11}	55.5 ^{0.7}	25.29 ^{0.12}	56.2 ^{0.8}
19.0	38.63 ^{0.81}	43.1 ^{2.9}	20.60 ^{0.16}	30.0 ^{0.1}	47.31 ^{0.31}	38.1 ^{2.6}	54.13 ^{0.14}	56.2 ^{0.6}	25.41 ^{0.13}	55.4 ^{0.8}
29.0	39.44 ^{1.05}	40.2 ^{2.8}	20.76 ^{0.18}	29.9 ^{0.2}	47.62 ^{0.40}	35.5 ^{2.4}	54.27 ^{0.16}	56.8 ^{0.6}	25.56 ^{0.19}	54.6 ^{0.7}
Aug. 7.9	40.49 ^{1.28}	37.4 ^{2.6}	20.94 ^{0.22}	29.7 ^{0.2}	48.02 ^{0.47}	33.1 ^{2.3}	54.43 ^{0.19}	57.4 ^{0.4}	25.75 ^{0.22}	53.9 ^{0.8}
17.9	41.77 ^{1.48}	34.8 ^{2.2}	21.16 ^{0.23}	29.5 ^{0.3}	48.49 ^{0.53}	30.8 ^{2.1}	54.62 ^{0.21}	57.8 ^{0.3}	25.97 ^{0.24}	53.1 ^{0.8}
27.9	43.25 ^{1.65}	32.6 ^{2.0}	21.39 ^{0.26}	29.2 ^{0.3}	49.02 ^{0.60}	28.7 ^{1.9}	54.83 ^{0.24}	58.1 ^{0.2}	26.21 ^{0.27}	52.3 ^{0.8}
Sept. 6.9	44.90 ^{1.78}	30.6 ^{1.7}	21.65 ^{0.27}	28.9 ^{0.4}	49.62 ^{0.65}	26.8 ^{1.6}	55.07 ^{0.25}	58.3 ^{0.1}	26.48 ^{0.30}	51.5 ^{0.9}
16.8	46.68 ^{1.90}	28.9 ^{1.2}	21.92 ^{0.30}	28.5 ^{0.5}	50.27 ^{0.69}	25.2 ^{1.3}	55.32 ^{0.27}	58.2 ^{0.3}	26.78 ^{0.30}	50.6 ^{0.8}
26.8	48.58 ^{1.97}	27.7 ^{0.8}	22.22 ^{0.30}	28.0 ^{0.6}	50.96 ^{0.72}	23.9 ^{0.9}	55.59 ^{0.28}	57.9 ^{0.4}	27.08 ^{0.33}	49.8 ^{0.8}
Oct. 6.8	50.55 ^{2.01}	26.9 ^{0.3}	22.52 ^{0.31}	27.4 ^{0.7}	51.68 ^{0.74}	23.0 ^{0.6}	55.87 ^{0.29}	57.5 ^{0.7}	27.41 ^{0.34}	49.0 ^{0.8}
16.7	52.56 ^{2.00}	26.6 ^{0.1}	22.83 ^{0.32}	26.7 ^{0.7}	52.42 ^{0.74}	22.4 ^{0.2}	56.16 ^{0.29}	56.8 ^{0.9}	27.75 ^{0.34}	48.2 ^{0.7}
26.7	54.56 ^{1.96}	26.7 ^{0.6}	23.15 ^{0.31}	26.0 ^{0.8}	53.16 ^{0.74}	22.2 ^{0.1}	56.45 ^{0.30}	55.9 ^{1.1}	28.09 ^{0.35}	47.5 ^{0.7}
Nov. 5.7	56.52 ^{1.86}	27.3 ^{1.1}	23.46 ^{0.31}	25.2 ^{0.7}	53.90 ^{0.78}	22.3 ^{0.7}	56.75 ^{0.29}	54.8 ^{1.2}	28.44 ^{0.34}	46.8 ^{0.6}
15.7	58.38 ^{1.71}	28.4 ^{1.5}	23.77 ^{0.29}	24.5 ^{0.7}	54.61 ^{0.71}	23.0 ^{1.0}	57.04 ^{0.28}	53.6 ^{1.3}	28.78 ^{0.33}	46.2 ^{0.4}
25.6	60.09 ^{1.53}	29.9 ^{2.0}	24.06 ^{0.28}	23.8 ^{0.7}	55.29 ^{0.61}	24.0 ^{1.4}	57.32 ^{0.26}	52.3 ^{1.3}	29.11 ^{0.30}	45.8 ^{0.2}
Dec. 5.6	61.62 ^{1.29}	31.9 ^{2.4}	24.34 ^{0.24}	23.1 ^{0.5}	55.90 ^{0.53}	25.4 ^{1.8}	57.58 ^{0.22}	51.0 ^{1.3}	29.41 ^{0.28}	45.6 ^{0.1}
15.6	62.91 ^{1.00}	34.3 ^{2.7}	24.58 ^{0.20}	22.6 ^{0.4}	56.43 ^{0.44}	27.2 ^{2.1}	57.80 ^{0.20}	49.7 ^{1.2}	29.69 ^{0.23}	45.5 ^{0.1}
25.6	63.91 ^{0.70}	37.0 ^{2.9}	24.78 ^{0.16}	22.2 ^{0.2}	56.87 ^{0.33}	29.3 ^{2.3}	58.00 ^{0.15}	48.5 ^{1.1}	29.92 ^{0.19}	45.6 ^{0.1}
35.5	64.61	39.9	24.94	22.0	57.20	31.6	58.15	47.4	30.11	45.9

FIXED STARS, 1903.

(CONSTANTS OF STRUVE AND PETERS.)

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Canis Minoris. (Procyon.)		β Geminorum. (Pollux.)		ϕ Geminorum.		26 Lynxis.		Groombridge 1374.	
	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.
	h m	° '	h m	° '	h m	° '	h m	° '	h m	° '
	7 34	+ 5 28	7 39	+28 15	7 47	+27 00	7 47	+47 48	7 48	+74 10
	s	"	s	"	s	"	s	"	s	"
Jan. 0.6	15.24	13.1	24.75	25.5	35.56	48.4	41.38	44.0	40.47	23.1
	.13	1.3	.15	0.1	.16	0.0	.21	1.3	.40	2.5
10.5	15.37	11.8	24.90	25.6	35.72	48.4	41.59	45.3	40.87	25.6
	.08	1.1	.11	0.3	.12	0.2	.14	1.5	.24	2.7
20.5	15.45	10.7	25.01	25.9	35.84	48.6	41.73	46.8	41.11	28.3
	.03	1.0	.05	0.4	.06	0.4	.06	1.5	.07	2.8
30.5	15.48	9.7	25.06	26.3	35.90	49.0	41.79	48.3	41.18	31.1
	.01	0.8	.01	0.6	.00	0.5	.01	1.7	.11	2.8
Feb. 9.4	15.47	8.9	25.05	26.9	35.90	49.5	41.78	50.0	41.07	33.9
	.07	0.5	.06	0.6	.05	0.6	.07	1.6	.25	2.6
19.4	15.40	8.4	24.99	27.5	35.85	50.1	41.71	51.6	40.82	36.5
	.10	0.5	.11	0.7	.10	0.6	.14	1.5	.41	2.4
Mar. 1.4	15.30	7.9	24.88	28.2	35.75	50.7	41.57	53.1	40.41	38.9
	.14	0.2	.15	0.6	.14	0.6	.19	1.4	.53	2.0
11.4	15.16	7.7	24.73	28.8	35.61	51.3	41.38	54.5	39.88	40.9
	.16	0.1	.17	0.6	.17	0.6	.24	1.1	.62	1.6
21.3	15.00	7.6	24.56	29.4	35.44	51.9	41.14	55.6	39.26	42.5
	.18	0.0	.20	0.5	.19	0.5	.25	0.9	.68	1.1
31.3	14.82	7.6	24.36	29.9	35.25	52.4	40.89	56.5	38.58	43.6
	.17	0.1	.20	0.4	.19	0.5	.27	0.6	.72	0.6
Apr. 10.3	14.65	7.7	24.16	30.3	35.06	52.9	40.62	57.1	37.86	44.2
	.17	0.3	.19	0.2	.19	0.3	.26	0.2	.72	0.1
20.3	14.48	8.0	23.97	30.5	34.87	53.2	40.36	57.3	37.14	44.3
	.16	0.3	.18	0.2	.18	0.2	.25	0.0	.69	0.4
30.2	14.32	8.3	23.79	30.7	34.69	53.4	40.11	57.3	36.45	43.9
	.14	0.5	.15	0.0	.15	0.0	.22	0.4	.63	1.0
May 10.2	14.18	8.8	23.64	30.7	34.54	53.4	39.89	56.9	35.82	42.9
	.11	0.5	.13	0.1	.13	0.0	.19	0.7	.56	1.4
20.2	14.07	9.3	23.51	30.6	34.41	53.4	39.70	56.2	35.26	41.5
	.08	0.6	.09	0.3	.09	0.2	.14	0.9	.45	1.8
30.1	13.99	9.9	23.42	30.3	34.32	53.2	39.56	55.3	34.81	39.7
	.05	0.7	.05	0.3	.06	0.2	.09	1.2	.34	2.2
June 9.1	13.94	10.6	23.37	30.0	34.26	53.0	39.47	54.1	34.47	37.5
	.01	0.7	.02	0.4	.02	0.3	.04	1.3	.21	2.4
19.1	13.93	11.3	23.35	29.6	34.24	52.7	39.43	52.8	34.26	35.1
	.03	0.8	.03	0.4	.02	0.4	.01	1.5	.09	2.6
29.0	13.96	12.1	23.38	29.2	34.26	52.3	39.44	51.3	34.17	32.5
	.06	0.8	.07	0.5	.06	0.5	.07	1.6	.04	2.8
July 9.0	14.02	12.9	23.45	28.7	34.32	51.8	39.51	49.7	34.21	29.7
	.09	0.8	.10	0.6	.10	0.4	.11	1.7	.17	2.9
19.0	14.11	13.7	23.55	28.1	34.42	51.4	39.62	48.0	34.38	26.8
	.12	0.7	.14	0.5	.12	0.6	.16	1.7	.29	2.9
29.0	14.23	14.4	23.69	27.6	34.54	50.8	39.78	46.3	34.67	23.9
	.15	0.7	.17	0.7	.16	0.5	.20	1.7	.41	2.8
Aug. 8.0	14.38	15.1	23.86	26.9	34.70	50.3	39.98	44.6	35.08	21.1
	.18	0.5	.19	0.6	.20	0.7	.24	1.7	.52	2.7
17.9	14.56	15.6	24.05	26.3	34.90	49.6	40.22	42.9	35.60	18.4
	.20	0.4	.23	0.7	.21	0.7	.28	1.6	.62	2.5
27.9	14.76	16.0	24.28	25.6	35.11	48.9	40.50	41.3	36.22	15.9
	.22	0.2	.25	0.7	.24	0.7	.32	1.5	.71	2.3
Sept. 6.9	14.98	16.2	24.53	24.9	35.35	48.2	40.82	39.8	36.93	13.6
	.24	0.0	.27	0.8	.27	0.8	.34	1.5	.79	2.0
16.8	15.22	16.2	24.80	24.1	35.62	47.4	41.16	38.3	37.72	11.6
	.26	0.3	.30	0.9	.29	0.8	.37	1.3	.86	1.8
26.8	15.48	15.9	25.10	23.2	35.91	46.6	41.53	37.0	38.58	9.8
	.27	0.5	.30	0.8	.30	0.9	.40	1.2	.92	1.4
Oct. 6.8	15.75	15.4	25.40	22.4	36.21	45.7	41.93	35.8	39.50	8.4
	.29	0.7	.33	0.9	.32	1.0	.41	1.1	.94	1.0
16.8	16.04	14.7	25.73	21.5	36.53	44.7	42.34	34.7	40.44	7.4
	.29	1.0	.33	0.9	.33	0.9	.42	0.8	.98	0.6
26.7	16.33	13.7	26.06	20.6	36.86	43.8	42.76	33.9	41.42	6.8
	.29	1.2	.33	0.8	.33	1.0	.43	0.5	.97	0.1
Nov. 5.7	16.62	12.5	26.39	19.8	37.19	42.8	43.19	33.4	42.39	6.7
	.30	1.3	.33	0.8	.33	0.8	.43	0.4	.96	0.3
15.7	16.92	11.2	26.72	19.0	37.52	42.0	43.62	33.0	43.35	7.0
	.28	1.5	.33	0.6	.33	0.8	.41	0.0	.91	0.8
25.7	17.20	9.7	27.05	18.4	37.85	41.2	44.03	33.0	44.26	7.8
	.26	1.5	.30	0.5	.30	0.6	.39	0.3	.85	1.3
Dec. 5.6	17.46	8.2	27.35	17.9	38.15	40.6	44.42	33.3	45.11	9.1
	.23	1.5	.27	0.3	.28	0.5	.35	0.6	.75	1.7
15.6	17.69	6.7	27.62	17.6	38.43	40.1	44.77	33.9	45.86	10.8
	.20	1.5	.24	0.2	.24	0.2	.31	0.8	.63	2.1
25.6	17.89	5.2	27.86	17.4	38.67	39.9	45.08	34.7	46.49	12.9
	.16	1.3	.19	0.0	.20	0.1	.24	1.2	.50	2.4
35.5	18.05	3.9	28.05	17.4	38.87	39.8	45.32	35.9	46.99	15.3

FIXED STARS, 1903.

(CONSTANTS OF STRUVE AND PETERS.)

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APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	ω^1 Cancri.		3 Ursæ Maj. (H.).		15 Argûs (ρ).		ζ^1 Cancri.		β Cancri.	
	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.
	h m 7 55	° ' " +25 39	h m 8 03	° ' " +68 45	h m 8 03	° ' " -24 01	h m 8 06	° ' " +17 56	h m 8 11	° ' " +9 28
	s	"	s	"	s	"	s	"	s	"
Jan. 0.6	5.56	17.4	13.48	19.3	26.64	35.1	40.69	13.3	16.98	53.2
10.5	5.73	17.3	13.83	21.6	26.78	38.0	40.86	12.7	17.15	52.1
20.5	5.85	17.4	14.07	24.0	26.87	40.7	40.99	12.2	17.27	51.1
30.5	5.92	17.7	14.18	26.6	26.92	43.4	41.06	12.0	17.34	50.4
Feb. 9.5	5.93	18.1	14.16	29.2	26.90	45.7	41.08	11.9	17.36	49.8
19.4	5.88	18.6	14.01	31.7	26.84	47.8	41.05	12.0	17.33	49.4
Mar. 1.4	5.79	19.2	13.75	34.1	26.74	49.6	40.97	12.2	17.26	49.2
11.4	5.66	19.8	13.39	36.1	26.59	51.1	40.86	12.6	17.15	49.1
21.3	5.50	20.4	12.95	37.8	26.42	52.2	40.71	12.9	17.01	49.2
31.3	5.32	20.9	12.46	39.1	26.23	52.9	40.55	13.3	16.85	49.4
Apr. 10.3	5.13	21.4	11.94	39.9	26.03	53.2	40.37	13.7	16.69	49.6
20.3	4.94	21.7	11.41	40.2	25.84	53.2	40.20	14.1	16.52	49.9
30.2	4.76	22.0	10.90	40.0	25.64	52.9	40.03	14.4	16.36	50.3
May 10.2	4.61	22.1	10.43	39.4	25.47	52.2	39.88	14.7	16.21	50.8
20.2	4.48	22.1	10.01	38.3	25.32	51.1	39.76	15.0	16.09	51.2
30.2	4.38	22.1	9.66	36.8	25.20	49.8	39.66	15.2	15.99	51.7
June 9.1	4.32	21.9	9.40	34.9	25.10	48.2	39.59	15.4	15.92	52.2
19.1	4.30	21.6	9.23	32.7	25.04	46.4	39.56	15.6	15.89	52.8
29.1	4.31	21.3	9.14	30.4	25.01	44.4	39.56	15.6	15.89	53.3
July 9.0	4.36	21.0	9.16	27.8	25.02	42.2	39.60	15.7	15.92	53.8
19.0	4.45	20.6	9.27	25.1	25.06	40.0	39.67	15.7	15.98	54.3
29.0	4.57	20.1	9.47	22.4	25.14	37.8	39.77	15.7	16.07	54.7
Aug. 8.0	4.72	19.6	9.76	19.7	25.25	35.7	39.91	15.6	16.19	55.1
17.9	4.90	19.0	10.12	17.1	25.39	33.7	40.07	15.3	16.34	55.4
27.9	5.11	18.3	10.57	14.6	25.56	32.0	40.25	15.0	16.51	55.5
Sept. 6.9	5.34	17.6	11.09	12.2	25.77	30.5	40.46	14.6	16.71	55.4
16.9	5.60	16.8	11.67	10.1	26.00	29.5	40.70	14.0	16.93	55.2
26.8	5.88	15.9	12.30	8.2	26.25	28.8	40.96	13.3	17.17	54.7
Oct. 6.8	6.17	15.0	12.98	6.6	26.52	28.7	41.23	12.4	17.44	54.0
16.8	6.48	14.0	13.70	5.4	26.82	29.0	41.53	11.5	17.72	53.2
26.7	6.81	13.0	14.44	4.5	27.12	29.8	41.84	10.4	18.02	52.1
Nov. 5.7	7.14	12.0	15.18	4.1	27.43	31.1	42.15	9.2	18.32	50.8
15.7	7.47	11.0	15.93	4.1	27.74	32.9	42.47	8.0	18.63	49.5
25.7	7.80	10.2	16.65	4.5	28.04	35.0	42.78	6.8	18.93	48.1
Dec. 5.6	8.10	9.4	17.32	5.4	28.32	37.4	43.08	5.7	19.22	46.6
15.6	8.38	8.9	17.94	6.7	28.58	40.1	43.35	4.7	19.48	45.2
25.6	8.63	8.5	18.47	8.4	28.79	42.9	43.60	3.8	19.72	43.8
35.6	8.83	8.3	18.90	10.5	28.96	45.8	43.80	3.1	19.92	42.6

FIXED STARS, 1903.

(CONSTANTS OF STRUVE AND PETERS.)

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	30 Monocerotis.		† Chamæleonis.		γ Cancri.		α Hydræ.		γ Cancri.	
	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.
	h m 8 20	° ' s — 3 35	h m 8 23	° ' s — 77 10	h m 8 27	° ' s + 20 45	h m 8 33	° ' s + 3 40	h m 8 37	° ' s + 21 48
	s	"	s	"	s	"	s	"	s	"
Jan. 0.6	50.52	— 17	40.28	— 27	7.67	61.7	42.89	45.2	42.04	49.4
10.6	50.69	— 12	40.55	— 22.2	7.87	61.1	43.08	43.7	42.25	48.9
20.5	50.81	— 08	40.64	— 26.0	8.02	60.8	43.22	42.3	42.41	48.6
30.5	50.89	— 02	40.54	— 29.7	8.12	60.7	43.31	41.1	42.52	48.6
Feb. 9.5	50.91	— 03	40.25	— 33.4	8.16	60.8	43.35	40.2	42.57	48.7
19.4	50.88	— 06	39.80	— 36.9	8.14	61.1	43.34	39.4	42.57	49.0
Mar. 1.4	50.82	— 11	39.20	— 40.1	8.08	61.5	43.28	38.9	42.52	49.5
11.4	50.71	— 13	38.47	— 42.9	7.98	61.9	43.19	38.5	42.43	50.0
21.4	50.58	— 16	37.62	— 45.4	7.85	62.5	43.07	38.4	42.30	50.6
31.3	50.42	— 17	36.70	— 47.3	7.69	63.0	42.92	38.4	42.15	51.3
Apr. 10.3	50.25	— 16	35.73	— 48.8	7.52	63.5	42.76	38.6	41.98	51.8
20.3	50.09	— 17	34.72	— 49.8	7.34	64.0	42.60	38.8	41.80	52.4
30.3	49.92	— 14	33.71	— 50.2	7.17	64.4	42.44	39.2	41.63	52.8
May 10.2	49.78	— 13	32.71	— 50.1	7.02	64.8	42.29	39.7	41.47	53.2
20.2	49.65	— 11	31.76	— 49.5	6.88	65.0	42.16	40.3	41.33	53.5
30.2	49.54	— 07	30.88	— 48.4	6.77	65.2	42.06	40.9	41.22	53.7
June 9.2	49.47	— 05	30.08	— 46.7	6.69	65.3	41.98	41.6	41.13	53.8
19.1	49.42	— 02	29.38	— 44.7	6.65	65.4	41.93	42.4	41.08	53.8
29.1	49.40	— 02	28.81	— 42.2	6.63	65.3	41.90	43.1	41.05	53.7
July 9.1	49.42	— 04	28.38	— 39.5	6.65	65.2	41.91	43.9	41.06	53.5
19.0	49.46	— 07	28.10	— 36.5	6.70	65.0	41.95	44.7	41.10	53.3
29.0	49.53	— 11	27.97	— 33.3	6.78	64.8	42.02	45.4	41.18	52.9
Aug. 8.0	49.64	— 13	28.02	— 30.1	6.90	64.4	42.11	46.1	41.28	52.5
18.0	49.77	— 16	28.22	— 26.9	7.04	64.0	42.23	46.6	41.41	52.0
27.9	49.93	— 18	28.60	— 24.0	7.21	63.4	42.38	47.0	41.57	51.3
Sept. 6.9	50.11	— 21	29.13	— 21.2	7.41	62.8	42.56	47.1	41.76	50.6
16.9	50.32	— 23	29.81	— 18.9	7.63	62.0	42.76	47.1	41.98	49.7
26.8	50.55	— 25	30.61	— 17.0	7.88	61.0	42.99	46.8	42.22	48.6
Oct. 6.8	50.80	— 28	31.52	— 15.6	8.15	60.0	43.24	46.2	42.49	47.5
16.8	51.08	— 29	32.50	— 14.9	8.44	58.9	43.51	45.4	42.78	46.3
26.8	51.37	— 29	33.52	— 14.8	8.75	57.6	43.80	44.3	43.08	45.0
Nov. 5.7	51.66	— 30	34.55	— 15.4	9.07	56.4	44.10	43.0	43.40	43.7
15.7	51.96	— 30	35.55	— 16.7	9.40	55.1	44.40	41.5	43.73	42.4
25.7	52.26	— 29	36.49	— 18.5	9.72	53.9	44.70	39.9	44.06	41.1
Dec. 5.7	52.55	— 26	37.33	— 21.0	10.03	52.8	45.00	38.2	44.38	39.9
15.6	52.81	— 23	38.04	— 23.8	10.33	51.7	45.28	36.4	44.68	38.9
25.6	53.04	— 20	38.60	— 27.1	10.59	50.9	45.52	34.7	44.96	38.0
35.6	53.24	— 20	38.98	— 30.7	10.82	50.2	45.74	33.1	45.19	37.4

FIXED STARS, 1903.

(CONSTANTS OF STRUVE AND PETERS.)

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APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	ε Hydræ.		σ ² Cancrī (mean).		ι Ursæ Majoris.		σ ⁴ Ursæ Majoris.		κ Cancrī.	
	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.
	h m 8 41	° ' " + 6 46	h m 8 48	° ' " + 30 56	h m 8 52	° ' " + 48 24	h m 9 01	° ' " + 67 31	h m 9 02	° ' " + 11 03
Jan. 0.6	39.97	18.5	21.30	33.7	35.99	64.0	54.56	22.9	31.14	19.5
10.6	40.17	17.1	21.53	33.7	36.28	64.9	55.03	24.7	31.36	18.3
20.5	40.32	15.9	21.72	33.9	36.51	66.1	55.39	26.8	31.54	17.3
30.5	40.42	14.9	21.85	34.4	36.67	67.6	55.64	29.2	31.66	16.5
Feb. 9.5	40.47	14.1	21.91	35.1	36.75	69.3	55.76	31.7	31.73	15.9
19.5	40.47	13.5	21.92	36.0	36.76	71.1	55.77	34.4	31.76	15.6
Mar. 1.4	40.42	13.2	21.88	36.9	36.70	72.9	55.66	37.0	31.73	15.4
11.4	40.33	13.0	21.79	37.9	36.57	74.7	55.44	39.5	31.66	15.5
21.4	40.21	12.9	21.66	38.9	36.40	76.4	55.12	41.7	31.56	15.7
31.3	40.07	13.1	21.49	39.9	36.18	77.8	54.73	43.6	31.43	16.0
Apr. 10.3	39.92	13.3	21.31	40.7	35.94	79.0	54.29	45.1	31.28	16.4
20.3	39.75	13.6	21.13	41.4	35.68	79.9	53.82	46.1	31.12	16.8
30.3	39.60	14.0	20.94	42.0	35.43	80.5	53.34	46.7	30.97	17.2
May 10.2	39.45	14.5	20.76	42.3	35.18	80.7	52.86	46.8	30.82	17.7
20.2	39.32	15.0	20.61	42.5	34.96	80.5	52.42	46.4	30.68	18.2
30.2	39.21	15.6	20.47	42.5	34.76	80.1	52.02	45.5	30.57	18.7
June 9.2	39.12	16.2	20.37	42.3	34.61	79.3	51.68	44.2	30.47	19.2
19.1	39.07	16.8	20.30	42.0	34.49	78.2	51.40	42.4	30.40	19.7
29.1	39.04	17.5	20.26	41.5	34.42	76.9	51.20	40.4	30.36	20.1
July 9.1	39.04	18.1	20.26	40.8	34.39	75.4	51.08	38.1	30.35	20.5
19.0	39.07	18.7	20.29	40.0	34.41	73.7	51.04	35.5	30.37	20.8
29.0	39.13	19.2	20.36	39.1	34.48	71.8	51.08	32.8	30.41	21.1
Aug. 8.0	39.22	19.6	20.46	38.1	34.58	69.8	51.20	29.9	30.48	21.2
18.0	39.34	20.0	20.59	37.0	34.74	67.8	51.41	27.0	30.58	21.2
27.9	39.48	20.2	20.75	35.8	34.93	65.7	51.69	24.2	30.71	21.1
Sept. 6.9	39.66	20.1	20.94	34.6	35.17	63.6	52.05	21.3	30.87	20.8
16.9	39.86	19.9	21.17	33.2	35.44	61.5	52.48	18.6	31.05	20.4
26.9	40.08	19.5	21.42	31.8	35.75	59.5	52.98	16.0	31.26	19.7
Oct. 6.8	40.32	18.8	21.70	30.4	36.10	57.6	53.54	13.7	31.50	18.8
16.8	40.59	17.9	22.00	28.9	36.48	55.8	54.15	11.6	31.76	17.7
26.8	40.88	16.7	22.33	27.5	36.88	54.2	54.80	9.9	32.04	16.5
Nov. 5.7	41.18	15.4	22.67	26.1	37.31	52.8	55.49	8.6	32.34	15.0
15.7	41.49	13.9	23.03	24.8	37.75	51.7	56.20	7.7	32.66	13.5
25.7	41.80	12.3	23.38	23.6	38.18	50.9	56.91	7.2	32.97	11.9
Dec. 5.7	42.10	10.7	23.73	22.7	38.61	50.5	57.61	7.3	33.29	10.3
15.6	42.38	9.0	24.06	22.0	39.02	50.4	58.26	7.8	33.58	8.7
25.6	42.64	7.4	24.36	21.5	39.40	50.8	58.87	8.9	33.86	7.2
35.6	42.86	6.0	24.62	21.3	39.72	51.5	59.39	10.4	34.10	5.9

FIXED STARS, 1903.

(CONSTANTS OF STRUVE AND PETERS.)

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	θ Hydræ			β Argus.			γ Argus.			α Lynceis.			α Hydræ.		
	Right Ascension.		Declina- tion North.	Right Ascension.		Declina- tion South.	Right Ascension.		Declina- tion South.	Right Ascension.		Declina- tion North.	Right Ascension.		Declina- tion South.
	h	m	°	h	m	°	h	m	°	h	m	°	h	m	°
	9	09	+ 2 43	9	12	-69 19	9	14	-58 52	9	15	+34 47	9	22	- 8 14
	s	"	"	s	"	"	s	"	"	s	"	"	s	"	"
Jan. 0.6	20.59		15.4	12.55		0.0	32.54		2.6	10.34		54.0	50.76		23.8
		.22	1.7		.33	3.6		.28	3.6		.27	0.0		.22	2.2
10.6	20.81		13.7	12.90		3.6	32.82		6.2	10.61		54.0	50.98		26.0
		.17	1.6		.23	3.8		.20	3.7		.22	0.4		.18	2.2
20.6	20.98		12.1	13.13		7.4	33.02		9.9	10.83		54.0	51.16		28.2
		.13	1.3		.12	3.8		.11	3.8		.16	0.6		.14	1.9
30.5	21.11		10.8	13.25		11.2	33.13		13.7	10.99		55.4	51.30		30.1
		.07	1.1		.00	3.9		.04	3.7		.10	0.9		.08	1.8
Feb. 9.5	21.18		9.7	13.25		15.1	33.17		17.4	11.09		55.9	51.38		31.9
		.03	0.9		.12	3.7		.05	3.6		.04	1.1		.03	1.5
19.5	21.21		8.8	13.13		18.8	33.12		21.0	11.13		57.0	51.41		33.4
		.02	0.6		.22	3.6		.13	3.4		.01	1.2		.01	1.3
Mar. 1.5	21.19		8.2	12.91		22.4	32.99		24.4	11.12		58.2	51.40		34.7
		.07	0.4		.31	3.2		.19	3.1		.07	1.3		.06	1.0
11.4	21.12		7.8	12.60		25.6	32.80		27.5	11.05		59.5	51.34		35.7
		.09	0.3		.40	2.9		.25	2.7		.12	1.2		.09	0.8
21.4	21.03		7.6	12.20		28.5	32.55		30.2	10.93		60.7	51.25		36.5
		.13	0.1		.47	2.4		.30	2.3		.15	1.3		.11	0.5
31.4	20.90		7.5	11.73		30.9	32.25		32.5	10.78		62.0	51.14		37.0
		.14	0.2		.54	2.1		.33	1.8		.17	1.1		.14	0.3
Apr. 10.3	20.76		7.7	11.21		33.0	31.92		34.3	10.61		63.1	51.00		37.3
		.15	0.1		.55	1.5		.36	1.3		.19	0.9		.15	0.0
20.3	20.61		7.9	10.66		34.5	31.56		35.6	10.42		64.0	50.85		37.3
		.15	0.4		.57	1.0		.36	0.9		.19	0.7		.15	0.1
30.3	20.46		8.3	10.09		35.5	31.20		36.5	10.23		64.7	50.70		37.2
		.15	0.5		.58	0.5		.37	0.3		.19	0.6		.15	0.4
May 10.3	20.31		8.8	9.51		36.0	30.83		36.8	10.04		65.3	50.55		36.8
		.13	0.5		.57	0.0		.36	0.2		.17	0.3		.14	0.6
20.2	20.18		9.3	8.94		36.0	30.47		36.6	9.87		65.6	50.41		36.2
		.12	0.6		.54	0.6		.34	0.6		.16	0.0		.13	0.7
30.2	20.06		9.9	8.40		35.4	30.13		36.0	9.71		65.6	50.28		35.5
		.09	0.7		.51	1.1		.32	1.2		.12	0.2		.10	0.9
June 9.2	19.97		10.6	7.89		34.3	29.81		34.8	9.59		65.4	50.18		34.6
		.08	0.8		.46	1.6		.27	1.7		.10	0.4		.09	1.0
19.2	19.89		11.4	7.43		32.7	29.54		33.1	9.49		65.0	50.09		33.6
		.01	0.7		.40	2.1		.24	2.0		.07	0.6		.06	1.2
29.1	19.85		12.1	7.03		30.6	29.30		31.1	9.42		66.4	50.03		32.4
		.02	0.8		.32	2.4		.19	2.4		.03	0.7		.04	1.2
July 9.1	19.83		12.9	6.71		28.2	29.11		28.7	9.39		63.7	49.99		31.2
		.00	0.7		.25	2.7		.14	2.7		.00	1.0		.01	1.2
19.1	19.83		13.6	6.46		25.5	28.97		26.0	9.39		62.7	49.98		30.0
		.04	0.7		.16	3.0		.08	2.9		.04	1.1		.02	1.3
29.0	19.87		14.3	6.30		22.5	28.89		23.1	9.43		61.6	50.00		28.7
		.06	0.6		.06	3.1		.02	3.1		.07	1.3		.04	1.2
Aug. 8.0	19.93		14.9	6.24		19.4	28.87		20.0	9.50		60.3	50.04		27.5
		.09	0.5		.04	3.2		.05	3.0		.10	1.4		.07	1.1
18.0	20.02		15.4	6.28		16.2	28.92		17.0	9.60		58.9	50.11		26.4
		.11	0.4		.14	3.1		.12	3.0		.14	1.5		.10	0.9
28.0	20.13		15.8	6.42		13.1	29.04		14.0	9.74		57.4	50.21		25.5
		.15	0.1		.24	2.9		.18	2.7		.17	1.6		.13	0.8
Sept. 6.9	20.28		15.9	6.66		10.2	29.22		11.3	9.91		55.8	50.34		24.7
		.17	0.1		.35	2.7		.25	2.5		.20	1.6		.16	0.5
16.9	20.45		15.8	7.01		7.5	29.47		8.8	10.11		54.2	50.50		24.2
		.20	0.3		.43	2.2		.31	2.1		.24	1.8		.19	0.2
26.9	20.65		15.5	7.44		5.3	29.78		6.7	10.35		52.4	50.69		24.0
		.23	0.6		.52	1.8		.37	1.5		.27	1.7		.21	0.2
Oct. 6.9	20.88		14.9	7.96		3.5	30.15		5.2	10.62		50.7	50.90		24.2
		.26	0.8		.59	1.2		.42	1.0		.30	1.8		.23	0.5
16.8	21.14		14.1	8.55		2.3	30.57		4.2	10.92		48.9	51.15		24.7
		.27	1.2		.65	0.6		.46	0.5		.32	1.7		.27	0.8
26.8	21.41		12.9	9.20		1.7	31.03		3.7	11.24		47.2	51.42		25.5
		.30	1.3		.67	0.1		.49	0.3		.35	1.6		.29	1.2
Nov. 5.8	21.71		11.6	9.87		1.8	31.52		4.0	11.59		45.6	51.71		26.7
		.30	1.6		.69	0.7		.49	0.9		.36	1.5		.31	1.5
15.7	22.01		10.0	10.56		2.5	32.01		4.9	11.95		44.1	52.02		28.2
		.31	1.7		.67	1.4		.49	1.5		.37	1.3		.31	1.8
25.7	22.32		8.3	11.23		3.9	32.50		6.4	12.32		42.8	52.33		30.0
		.31	1.9		.64	2.0		.48	2.1		.37	1.1		.31	2.0
Dec. 5.7	22.63		6.4	11.87		5.9	32.98		8.5	12.69		41.7	52.64		32.0
		.30	1.8		.59	2.5		.43	2.7		.35	0.8		.30	2.2
15.7	22.93		4.6	12.46		8.4	33.41		11.2	13.04		40.9	52.94		34.2
		.27	1.9		.50	3.1		.39	3.0		.34	0.5		.27	2.3
25.6	23.20		2.7	12.96		11.5	33.80		14.2	13.38		40.4	53.21		36.5
		.24	1.8		.41	3.3		.32	3.4		.29	0.2		.25	2.2
35.6	23.44		0.9	13.37		14.8	34.12		17.6	13.67		40.2	53.46		38.7

FIXED STARS, 1903.

(CONSTANTS OF STRUVE AND PETERS.)

3

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Draconis (H.).		δ Ursæ Majoris.		θ Ursæ Majoris.		ιo Leonis Minoris.		ο Leonis.	
	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.
	h m 9 23	° ' " +81 44	h m 9 25	° ' " +70 14	h m 9 26	° ' " +52 06	h m 9 28	° ' " +36 49	h m 9 35	° ' " +10 1
Jan. 0.6	22.94	58.7	57.37	63.8	24.02	51.4	18.41	25.3	59.81	50.5
10.6	24.14	60.7	57.94	65.4	24.37	52.2	18.70	25.3	60.06	49.1
20.6	25.09	63.2	58.40	67.5	24.65	53.4	18.94	25.7	60.26	47.9
30.5	25.76	66.0	58.73	69.9	24.86	55.0	19.11	26.4	60.42	47.0
Feb. 9.5	26.13	69.0	58.93	72.5	25.00	56.8	19.23	27.4	60.52	46.3
19.5	26.18	72.1	59.00	75.3	25.06	58.7	19.29	28.6	60.58	45.9
Mar. 1.5	25.93	75.1	58.93	78.0	25.04	60.8	19.29	29.9	60.58	45.7
11.4	25.39	78.0	58.73	80.7	24.94	62.9	19.23	31.3	60.55	45.7
21.4	24.59	80.6	58.42	83.2	24.79	64.9	19.13	32.7	60.47	45.8
31.4	23.58	82.8	58.02	85.3	24.59	66.7	18.98	34.1	60.37	46.2
Apr. 10.4	22.39	84.6	57.55	87.1	24.35	68.2	18.81	35.4	60.24	46.6
20.3	21.08	85.9	57.03	88.5	24.09	69.5	18.62	36.4	60.10	47.1
30.3	19.72	86.6	56.49	89.3	23.81	70.4	18.43	37.3	59.95	47.6
May 10.3	18.34	86.8	55.94	89.7	23.54	70.9	18.24	37.9	59.80	48.2
20.2	16.99	86.3	55.42	89.5	23.28	71.0	18.06	38.2	59.67	48.7
30.2	15.73	85.4	54.93	88.8	23.04	70.8	17.90	38.4	59.54	49.3
June 9.2	14.59	83.9	54.49	87.7	22.84	70.1	17.76	38.2	59.44	49.8
19.2	13.61	82.0	54.12	86.1	22.67	69.2	17.65	37.8	59.35	50.3
29.1	12.81	79.6	53.83	84.2	22.54	67.9	17.57	37.2	59.29	50.8
July 9.1	12.21	76.9	53.62	81.9	22.46	66.3	17.52	36.3	59.25	51.2
19.1	11.83	74.0	53.50	79.3	22.43	64.5	17.50	35.3	59.24	51.5
29.1	11.67	70.8	53.47	76.5	22.44	62.4	17.53	34.0	59.25	51.8
Aug. 8.0	11.73	67.5	53.53	73.6	22.49	60.2	17.58	32.6	59.29	51.9
18.0	12.03	64.1	53.68	70.5	22.60	57.9	17.67	31.1	59.36	51.9
28.0	12.54	60.7	53.92	67.4	22.75	55.5	17.80	29.5	59.45	51.8
Sept. 6.9	13.28	57.4	54.25	64.3	22.95	53.0	17.95	27.7	59.57	51.4
16.9	14.21	54.2	54.67	61.3	23.19	50.6	18.15	25.9	59.72	50.9
26.9	15.34	51.3	55.16	58.5	23.48	48.1	18.38	24.0	59.91	50.2
Oct. 6.9	16.64	48.6	55.74	55.9	23.81	45.8	18.64	22.1	60.12	49.2
16.8	18.09	46.2	56.38	53.5	24.18	43.6	18.94	20.2	60.36	48.1
26.8	19.66	44.3	57.07	51.5	24.58	41.6	19.26	18.3	60.63	46.7
Nov. 5.8	21.34	42.8	57.82	49.8	25.02	39.8	19.61	16.6	60.92	45.2
15.8	23.07	41.8	58.60	48.6	25.48	38.3	19.98	15.0	61.23	43.5
25.7	24.82	41.4	59.39	47.9	25.95	37.2	20.36	13.6	61.55	41.8
Dec. 5.7	26.54	41.5	60.17	47.6	26.41	36.4	20.74	12.4	61.87	40.0
15.7	28.19	42.2	60.93	48.0	26.87	36.1	21.10	11.6	62.18	38.3
25.6	29.71	43.4	61.63	48.8	27.29	36.3	21.45	11.0	62.47	36.7
35.6	31.05	45.2	62.26	50.2	27.67	36.8	21.76	10.9	62.74	35.2

FIXED STARS, 1903.

(CONSTANTS OF STRUVE AND PETERS.)

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	ζ Chamæleontis.		ε Leonis.		μ Leonis.		19 Leonis Minoris.		π Leonis.	
	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.
	h m 9 36	° ' s -80 30	h m 9 40	° ' s +24 12	h m 9 47	° ' s +26 27	h m 9 51	° ' s +41 30	h m 9 55	° ' s + 8 30
	s	"	s	"	s	"	s	"	s	"
Jan. 0.6	53.82	13.2	22.09	61.0	16.13	35.2	46.01	45.7	6.54	24.5
10.6	54.58	16.4	22.36	60.3	16.40	34.5	46.34	45.8	6.80	23.0
20.6	55.12	20.1	22.58	59.9	16.64	34.2	46.61	46.2	7.01	21.7
30.6	55.42	23.8	22.76	59.8	16.82	34.2	46.82	47.1	7.19	20.6
Feb. 9.5	55.49	27.7	22.88	60.0	16.95	34.5	46.98	48.3	7.31	19.7
19.5	55.32	31.5	22.94	60.4	17.02	35.0	47.07	49.7	7.38	19.2
Mar. 1.5	54.93	35.3	22.96	61.0	17.04	35.8	47.09	51.3	7.41	18.8
11.4	54.34	38.8	22.92	61.8	17.01	36.7	47.06	53.0	7.39	18.7
21.4	53.56	42.0	22.84	62.7	16.94	37.8	46.97	54.7	7.33	18.8
31.4	52.63	44.9	22.73	63.6	16.83	38.8	46.84	56.4	7.24	19.1
Apr. 10.4	51.56	47.4	22.59	64.5	16.69	39.8	46.67	57.9	7.13	19.4
20.3	50.40	49.5	22.44	65.4	16.54	40.8	46.48	59.2	7.00	19.9
30.3	49.16	51.0	22.28	66.2	16.38	41.7	46.28	60.3	6.86	20.4
May 10.3	47.89	52.1	22.12	66.9	16.22	42.4	46.07	61.1	6.72	21.0
20.3	46.60	52.6	21.97	67.4	16.06	43.0	45.87	61.6	6.59	21.6
30.2	45.32	52.6	21.83	67.8	15.92	43.4	45.68	61.8	6.46	22.2
June 9.2	44.10	52.0	21.71	68.0	15.79	43.6	45.52	61.7	6.35	22.8
19.2	42.95	50.9	21.62	68.1	15.69	43.6	45.38	61.3	6.26	23.4
29.1	41.91	49.3	21.54	68.0	15.61	43.5	45.27	60.6	6.18	23.9
July 9.1	41.01	47.2	21.50	67.8	15.56	43.2	45.19	59.6	6.13	24.4
19.1	40.26	44.8	21.48	67.4	15.53	42.7	45.14	58.4	6.10	24.8
29.1	39.70	42.0	21.49	66.9	15.53	42.0	45.13	57.0	6.10	25.1
Aug. 8.0	39.35	39.0	21.53	66.2	15.56	41.2	45.16	55.3	6.12	25.3
18.0	39.22	35.9	21.60	65.4	15.62	40.3	45.22	53.5	6.16	25.4
28.0	39.31	32.8	21.69	64.4	15.72	39.1	45.32	51.6	6.24	25.3
Sept. 7.0	39.63	29.7	21.82	63.3	15.84	37.9	45.45	49.5	6.34	25.1
16.9	40.19	26.8	21.98	62.1	16.00	36.4	45.63	47.3	6.48	24.6
26.9	40.96	24.2	22.18	60.6	16.18	34.9	45.84	45.1	6.64	23.9
Oct. 6.9	41.92	22.0	22.40	59.1	16.41	33.2	46.10	42.9	6.84	23.0
16.8	43.05	20.3	22.66	57.4	16.66	31.5	46.39	40.7	7.07	21.9
26.8	44.32	19.2	22.94	55.8	16.94	29.7	46.71	38.5	7.33	20.5
Nov. 5.8	45.66	18.8	23.25	54.0	17.25	27.9	47.07	36.5	7.61	19.0
15.8	47.05	19.0	23.58	52.3	17.58	26.1	47.45	34.7	7.91	17.3
25.7	48.43	19.8	23.92	50.6	17.93	24.4	47.85	33.1	8.23	15.5
Dec. 5.7	49.75	21.3	24.26	49.1	18.28	22.9	48.25	31.9	8.55	13.7
15.7	50.96	23.4	24.59	47.7	18.62	21.5	48.64	30.9	8.86	11.8
25.7	52.03	26.0	24.91	46.6	18.94	20.4	49.02	30.4	9.16	10.0
35.6	52.91	29.1	25.20	45.8	19.24	19.6	49.37	30.3	9.44	8.4

FIXED STARS, 1903.
(CONSTANTS OF STRUVE AND PETERS.)

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APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	<i>α</i> Leonis. (Regulus.)		32 Ursæ Majoris.		λ Ursæ Majoris.		γ ¹ Leonis.		μ Hydræ.	
	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion South.
	h m 10 03	° ' " +12 24	h m 10 10	° ' " +65 34	h m 10 11	° ' " +43 23	h m 10 14	° ' " +20 19	h m 10 21	° ' " -16 20
Jan. 0.7	13.62	17.6	61.19	70.6	16.12	37.4	38.64	43.0	25.27	30.2
10.6	13.88 .26	16.2 1.4	61.74 .55	71.6 1.0	16.46 .34	37.5 0.1	38.93 .29	41.9 1.1	25.54 .27	32.7 2.5
20.6	14.11 .23	15.0 1.2	62.20 .46	73.1 1.5	16.76 .30	37.9 0.8	39.18 .25	41.1 0.8	25.77 .23	35.2 2.5
30.6	14.29 .18	14.2 0.8	62.58 .38	75.0 1.9	17.00 .24	38.7 0.4	39.38 .20	40.6 0.5	25.96 .19	37.6 2.4
Feb. 9.5	14.43 .14	13.6 0.6	62.86 .28	77.2 2.2	17.18 .18	39.9 1.2	39.53 .15	40.5 0.1	26.10 .14	39.9 2.3
	14.43 .08	13.6 0.4	62.86 .16	77.2 2.6	17.18 .12	39.9 1.5	39.53 .10	40.5 0.1	26.10 .09	39.9 2.1
19.5	14.51	13.2	63.02	79.8	17.30	41.4	39.63	40.6	26.19	42.0
Mar. 1.5	14.54 .03	13.1 0.1	63.07 .05	82.4 2.6	17.35 .05	43.1 1.7	39.68 .05	41.0 0.4	26.24 .05	43.8 1.8
	14.54 .01	13.1 0.2	63.07 .05	82.4 2.7	17.35 .01	43.1 1.9	39.68 .00	41.0 0.6	26.24 .00	43.8 1.6
11.5	14.53	13.3	63.02	85.1	17.34	45.0	39.68	41.6	26.24	45.4
	14.53 .05	13.3 0.3	63.02 .15	85.1 2.7	17.34 .07	45.0 1.8	39.68 .04	41.6 0.7	26.24 .04	45.4 1.3
21.4	14.48	13.6	62.87	87.8	17.27	46.8	39.64	42.3	26.20	46.7
	14.48 .08	13.6 0.4	62.87 .24	87.8 2.4	17.27 .12	46.8 1.9	39.64 .08	42.3 0.9	26.20 .08	46.7 1.1
31.4	14.40	14.0	62.63	90.2	17.15	48.7	39.56	43.2	26.12	47.8
	14.40 .12	14.0 0.6	62.63 .31	90.2 2.2	17.15 .16	48.7 1.7	39.56 .10	43.2 0.9	26.12 .10	47.8 0.8
Apr. 10.4	14.28	14.6	62.32	92.4	16.99	50.4	39.46	44.1	26.02	48.6
	14.28 .12	14.6 0.6	62.32 .37	92.4 1.8	16.99 .18	50.4 1.5	39.46 .13	44.1 0.9	26.02 .12	48.6 0.5
20.4	14.16	15.2	61.95	94.2	16.81	51.9	39.33	45.0	25.90	49.1
	14.16 .12	15.2 0.6	61.95 .40	94.2 1.8	16.81 .20	51.9 1.3	39.33 .14	45.0 0.8	25.90 .13	49.1 0.2
30.3	14.02	15.8	61.55	95.6	16.61	53.2	39.19	45.8	25.77	49.3
	14.02 .14	15.8 0.7	61.55 .42	95.6 1.4	16.61 .21	53.2 1.0	39.19 .15	45.8 0.8	25.77 .14	49.3 0.0
May 10.3	13.88	16.5	61.13	96.6	16.40	54.2	39.04	46.6	25.63	49.3
	13.88 .14	16.5 0.6	61.13 .43	96.6 0.5	16.40 .21	54.2 0.6	39.04 .14	46.6 0.7	25.63 .14	49.3 0.3
20.3	13.74	17.1	60.70	97.1	16.19	54.8	38.90	47.3	25.49	49.0
	13.74 .12	17.1 0.6	60.70 .40	97.1 0.1	16.19 .19	54.8 0.4	38.90 .13	47.3 0.6	25.49 .13	49.0 0.5
30.2	13.62	17.7	60.30	97.0	16.00	55.2	38.77	47.9	25.36	48.5
	13.62 .12	17.7 0.5	60.30 .39	97.0 0.5	16.00 .18	55.2 0.0	38.77 .13	47.9 0.5	25.36 .13	48.5 0.7
June 9.2	13.50	18.2	59.91	96.5	15.82	55.2	38.64	48.4	25.23	47.8
	13.50 .10	18.2 0.5	59.91 .34	96.5 0.9	15.82 .16	55.2 0.3	38.64 .10	48.4 0.5	25.23 .11	47.8 1.0
19.2	13.40	18.7	59.57	95.6	15.66	54.9	38.54	48.7	25.12	46.8
	13.40 .07	18.7 0.4	59.57 .30	95.6 1.5	15.66 .13	54.9 0.7	38.54 .09	48.7 0.2	25.12 .10	46.8 1.1
29.2	13.33	19.1	59.27	94.1	15.53	54.2	38.45	48.9	25.02	45.7
	13.33 .06	19.1 0.3	59.27 .24	94.1 1.8	15.53 .11	54.2 0.9	38.45 .07	48.9 0.0	25.02 .08	45.7 1.2
July 9.1	13.27	19.4	59.03	92.3	15.42	53.3	38.38	48.9	24.94	44.5
	13.27 .04	19.4 0.3	59.03 .18	92.3 2.1	15.42 .07	53.3 1.3	38.38 .04	48.9 0.2	24.94 .07	44.5 1.4
19.1	13.23	19.7	58.85	90.2	15.35	52.0	38.34	48.7	24.87	43.1
	13.23 .01	19.7 0.1	58.85 .11	90.2 2.5	15.35 .03	52.0 1.4	38.34 .02	48.7 0.3	24.87 .04	43.1 1.4
29.1	13.22	19.8	58.74	87.7	15.32	50.6	38.32	48.4	24.83	41.7
	13.22 .01	19.8 0.0	58.74 .05	87.7 2.7	15.32 .00	50.6 1.8	38.32 .00	48.4 0.4	24.83 .01	41.7 1.5
Aug. 8.1	13.23	19.8	58.69	85.0	15.32	48.8	38.32	48.0	24.82	40.2
	13.23 .04	19.8 0.2	58.69 .02	85.0 2.9	15.32 .03	48.8 1.9	38.32 .03	48.0 0.7	24.82 .00	40.2 1.4
18.0	13.27	19.6	58.71	82.1	15.35	46.9	38.35	47.3	24.82	38.8
	13.27 .07	19.6 0.3	58.71 .10	82.1 3.1	15.35 .07	46.9 2.1	38.35 .06	47.3 0.8	24.82 .04	38.8 1.3
28.0	13.34	19.3	58.81	79.0	15.42	44.8	38.41	46.5	24.86	37.5
	13.34 .10	19.3 0.5	58.81 .16	79.0 3.1	15.42 .11	44.8 2.2	38.41 .09	46.5 1.0	24.86 .08	37.5 1.1
Sept. 7.0	13.44	18.8	58.97	75.9	15.53	42.6	38.50	45.5	24.94	36.4
	13.44 .13	18.8 0.7	58.97 .24	75.9 3.2	15.53 .16	42.6 2.3	38.50 .12	45.5 1.1	24.94 .10	36.4 1.0
16.9	13.57	18.1	59.21	72.7	15.69	40.3	38.62	44.4	25.04	35.4
	13.57 .16	18.1 0.9	59.21 .31	72.7 3.1	15.69 .19	40.3 2.4	38.62 .16	44.4 1.1	25.04 .14	35.4 0.6
26.9	13.73	17.2	59.52	69.6	15.88	37.9	38.78	43.0	25.18	34.8
	13.73 .19	17.2 1.1	59.52 .39	69.6 3.0	15.88 .24	37.9 2.5	38.78 .19	43.0 1.5	25.18 .18	34.8 0.3
Oct. 6.9	13.92	16.1	59.91	66.6	16.12	35.4	38.97	41.5	25.36	34.5
	13.92 .22	16.1 1.3	59.91 .45	66.6 2.8	16.12 .28	35.4 2.4	38.97 .22	41.5 1.6	25.36 .21	34.5 0.0
16.9	14.14	14.8	60.36	63.8	16.40	33.0	39.19	39.9	25.57	34.5
	14.14 .26	14.8 1.5	60.36 .51	63.8 2.6	16.40 .31	33.0 2.3	39.19 .26	39.9 1.8	25.57 .24	34.5 0.4
26.8	14.40	13.3	60.87	61.2	16.71	30.7	39.45	38.1	25.81	34.9
	14.40 .28	13.3 1.7	60.87 .57	61.2 2.3	16.71 .35	30.7 2.2	39.45 .28	38.1 1.9	25.81 .28	34.9 0.9
Nov. 5.8	14.68	11.6	61.44	58.9	17.06	28.5	39.73	36.2	26.09	35.8
	14.68 .30	11.6 1.7	61.44 .61	58.9 1.9	17.06 .38	28.5 2.0	39.73 .31	36.2 1.9	26.09 .30	35.8 1.2
15.8	14.98	9.9	62.05	57.0	17.44	26.5	40.04	34.3	26.39	37.0
	14.98 .32	9.9 1.9	62.05 .64	57.0 1.5	17.44 .40	26.5 1.8	40.04 .33	34.3 1.9	26.39 .32	37.0 1.6
25.8	15.30	8.0	62.69	55.5	17.84	24.7	40.37	32.4	26.71	38.6
	15.30 .33	8.0 1.8	62.69 .66	55.5 0.9	17.84 .41	24.7 1.4	40.37 .34	32.4 1.8	26.71 .32	38.6 2.0
Dec. 5.7	15.63	6.2	63.35	54.6	18.25	23.3	40.71	30.6	27.03	40.6
	15.63 .32	6.2 1.8	63.35 .65	54.6 0.5	18.25 .41	23.3 1.1	40.71 .34	30.6 1.7	27.03 .32	40.6 2.1
15.7	15.95	4.4	64.00	54.1	18.66	22.2	41.05	28.9	27.35	42.7
	15.95 .30	4.4 1.6	64.00 .63	54.1 0.1	18.66 .40	22.2 0.7	41.05 .32	28.9 1.5	27.35 .31	42.7 2.4
25.7	16.25	2.8	64.63	54.2	19.06	21.5	41.37	27.4	27.66	45.1
	16.25 .29	2.8 1.5	64.63 .58	54.2 0.7	19.06 .37	21.5 0.2	41.37 .30	27.4 1.2	27.66 .29	45.1 2.5
35.6	16.54	1.3	65.21	54.9	19.43	21.3	41.67	26.2	27.95	47.6
	16.54 .29	1.3 1.5	65.21 .58	54.9 0.7	19.43 .37	21.3 0.2	41.67 .30	26.2 1.2	27.95 .29	47.6 2.5

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	β Leonis Minoris.		α Antliae.		γ Draconis (H.).		ρ Leonis.		δ Leonis Minoris.	
	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.
	h m 10 22	° +37 11	h m 10 22	° -30 34	h m 10 26	° +76 12	h m 10 27	° + 9 47	h m 10 38	° +23 41
	s	"	s	"	s	"	s	"	s	"
Jan. 0.7	17.64	58.1	44.30	25.1	53.43	23.0	43.35	70.9	9.55	32.7
10.6	17.96	57.7	44.58	28.0	54.34	24.2	43.63	69.4	9.85	31.7
20.6	18.25	57.7	44.82	30.9	55.13	25.9	43.88	68.0	10.12	30.9
30.6	18.49	58.2	45.02	33.9	55.78	28.1	44.08	66.9	10.34	30.6
Feb. 9.6	18.67	59.0	45.16	36.8	56.27	30.6	44.23	66.1	10.52	30.5
19.5	18.79	60.1	45.25	39.6	56.57	33.4	44.34	65.5	10.65	30.8
Mar. 1.5	18.86	61.4	45.29	42.2	56.69	36.4	44.40	65.2	10.72	31.4
11.5	18.86	63.0	45.28	44.6	56.62	39.4	44.42	65.2	10.75	32.2
21.4	18.81	64.6	45.23	46.7	56.38	42.4	44.39	65.4	10.73	33.1
31.4	18.72	66.3	45.15	48.4	55.99	45.1	44.32	65.7	10.67	34.2
Apr. 10.4	18.59	67.8	45.03	49.8	55.46	47.5	44.23	66.2	10.58	35.4
20.4	18.44	69.3	44.89	50.9	54.82	49.6	44.12	66.8	10.46	36.5
30.3	18.27	70.6	44.74	51.7	54.10	51.1	44.00	67.4	10.33	37.6
May 10.3	18.09	71.6	44.58	52.0	53.33	52.2	43.87	68.1	10.18	38.5
20.3	17.91	72.4	44.41	52.1	52.55	52.7	43.74	68.7	10.04	39.4
30.3	17.73	72.9	44.25	51.7	51.77	52.7	43.62	69.4	9.90	40.1
June 9.2	17.57	73.1	44.10	51.0	51.02	52.1	43.50	70.0	9.77	40.6
19.2	17.43	73.0	43.95	50.1	50.33	51.0	43.40	70.6	9.65	40.9
29.2	17.31	72.7	43.82	48.8	49.71	49.4	43.31	71.1	9.55	41.1
July 9.1	17.21	72.0	43.72	47.2	49.18	47.4	43.23	71.5	9.46	41.0
19.1	17.14	71.1	43.63	45.5	48.75	45.0	43.18	71.9	9.39	40.8
29.1	17.10	70.0	43.56	43.6	48.44	42.2	43.15	72.1	9.35	40.4
Aug. 8.1	17.09	68.6	43.53	41.6	48.24	39.2	43.14	72.2	9.33	39.7
18.0	17.11	67.0	43.53	39.5	48.16	36.0	43.16	72.2	9.34	38.9
28.0	17.17	65.3	43.56	37.5	48.22	32.6	43.20	72.0	9.37	37.9
Sept. 7.0	17.26	63.3	43.62	35.6	48.40	29.1	43.27	71.6	9.44	36.7
17.0	17.39	61.2	43.73	34.0	48.72	25.7	43.37	71.0	9.53	35.3
26.9	17.55	59.1	43.88	32.6	49.16	22.2	43.51	70.2	9.67	33.7
Oct. 6.9	17.76	56.8	44.06	31.6	49.72	19.0	43.68	69.2	9.84	32.0
16.9	18.01	54.5	44.29	31.0	50.41	15.9	43.88	68.0	10.04	30.1
26.8	18.29	52.2	44.56	30.8	51.21	13.1	44.12	66.5	10.28	28.1
Nov. 5.8	18.61	50.0	44.86	31.2	52.10	10.7	44.39	64.9	10.56	26.0
15.8	18.96	47.9	45.18	32.0	53.07	8.7	44.68	63.1	10.86	24.0
25.8	19.33	46.0	45.52	33.4	54.10	7.2	44.99	61.2	11.19	21.9
Dec. 5.7	19.71	44.3	45.87	35.2	55.17	6.2	45.32	59.2	11.53	20.0
15.7	20.09	43.0	46.22	37.3	56.23	5.9	45.64	57.3	11.88	18.2
25.7	20.46	42.0	46.55	39.8	57.26	6.1	45.96	55.5	12.22	16.7
35.7	20.81	41.4	46.85	42.6	58.24	6.9	46.25	53.8	12.54	15.5

(CONSTANTS OF STRUVE AND PETERS.)

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APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	7 Argus.		1 Leonis.		♂ Chamæleonis.		46 Leonis Minoris.		Groombridge 1706.	
	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.
	h m 10 41	° ' -59 10	h m 10 44	° ' +11 03	h m 10 44	° ' -80 01	h m 10 47	° ' +34 43	h m 10 52	° ' +78 16
	s	"	s	"	s	"	s	"	s	"
Jan. 0.7	20.31	19.1	10.55	20.3	59.68	30.8	54.17	59.8	13.36	60.2
10.6	20.73 ⁴²	22.1 ^{3.0}	10.84 ²⁹	18.7 ^{1.6}	60.73 ^{1.05}	33.6 ^{2.8}	54.50 ³³	59.1 ^{0.7}	14.46 ^{1.10}	61.1 ^{0.9}
20.6	21.09 ³⁶	25.4 ^{3.3}	11.10 ²⁶	17.4 ^{1.3}	61.61 ^{0.88}	36.7 ^{3.1}	54.80 ³⁰	58.8 ^{0.3}	15.45 ^{0.99}	62.6 ^{1.5}
30.6	21.38 ²⁹	28.9 ^{3.5}	11.32 ²⁶	16.3 ^{1.1}	62.30 ^{0.69}	40.2 ^{3.5}	55.06 ³⁶	59.0 ^{0.4}	16.28 ^{0.83}	64.6 ^{2.0}
Feb. 9.6	21.59 ²¹	32.6 ^{3.7}	11.49 ¹⁷	15.5 ^{0.8}	62.79 ^{0.49}	43.9 ^{3.7}	55.27 ²¹	59.5 ^{0.5}	16.94 ^{0.66}	67.0 ^{2.4}

FIXED STARS, 1903.

(CONSTANTS OF STRUVE AND PETERS.)

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Ursæ Majoris.		γ Octantis.		β Leonis.		ψ Ursæ Majoris.		δ Leonis.	
	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.
	h m 10 57	° ' " +62 15	h m 10 59	° ' " -84 04	h m 11 01	° ' " + 2 28	h m 11 04	° ' " +45 00	h m 11 08	° ' " +21 02
	s	"	s	"	s	"	s	"	s	"
Jan. 0.7	45.47	67.1	71.06	6.1	58.32	49.1	13.43	70.6	57.82	66.0
10.7	46.01	67.4	72.85	8.6	58.61	47.1	13.82	70.2	58.14	64.7
20.6	46.50	68.2	74.39	11.5	58.87	45.4	14.17	70.3	58.42	63.6
30.6	46.91	69.6	75.63	14.8	59.10	43.8	14.48	70.9	58.67	63.0
Feb. 9.6	47.25	71.4	76.54	18.4	59.28	42.5	14.72	71.9	58.87	62.7
19.5	47.49	73.6	77.11	22.2	59.42	41.4	14.91	73.3	59.03	62.7
Mar. 1.5	47.64	76.1	77.34	26.0	59.51	40.7	15.03	75.0	59.14	63.1
11.5	47.69	78.8	77.23	29.9	59.56	40.2	15.09	76.9	59.20	63.7
21.5	47.65	81.5	76.79	33.7	59.56	39.9	15.09	79.0	59.21	64.5
31.4	47.52	84.1	76.05	37.3	59.53	39.8	15.03	81.1	59.18	65.5
Apr. 10.4	47.33	86.6	75.03	40.6	59.47	40.0	14.93	83.2	59.12	66.6
20.4	47.07	88.9	73.76	43.6	59.39	40.3	14.78	85.1	59.03	67.8
30.4	46.76	90.8	72.28	46.3	59.29	40.7	14.61	86.9	58.92	68.9
May 10.3	46.43	92.3	70.61	48.5	59.18	41.2	14.42	88.3	58.80	70.0
20.3	46.07	93.3	68.80	50.3	59.06	41.8	14.22	89.5	58.67	70.9
30.3	45.72	93.9	66.88	51.5	58.94	42.5	14.02	90.3	58.54	71.8
June 9.2	45.37	94.0	64.92	52.1	58.82	43.1	13.82	90.8	58.41	72.5
19.2	45.03	93.7	62.95	52.2	58.71	43.8	13.63	90.9	58.29	73.0
29.2	44.73	92.8	61.02	51.8	58.61	44.5	13.45	90.6	58.18	73.3
July 9.2	44.46	91.5	59.20	50.8	58.52	45.2	13.30	89.9	58.08	73.5
19.1	44.23	89.8	57.52	49.3	58.45	45.8	13.17	88.9	57.99	73.4
29.1	44.05	87.8	56.04	47.3	58.39	46.4	13.07	87.6	57.92	73.2
Aug. 8.1	43.92	85.4	54.81	44.9	58.35	46.8	12.99	86.0	57.88	72.7
18.1	43.84	82.7	53.88	42.2	58.33	47.2	12.96	84.1	57.85	72.1
28.0	43.83	79.8	53.28	39.2	58.34	47.4	12.95	81.9	57.86	71.2
Sept. 7.0	43.87	76.7	53.04	36.1	58.37	47.4	12.99	79.5	57.89	70.1
17.0	43.98	73.4	53.18	33.0	58.44	47.2	13.07	77.0	57.95	68.8
26.9	44.16	70.2	53.71	29.9	58.54	46.8	13.19	74.3	58.05	67.3
Oct. 6.9	44.41	66.9	54.61	27.0	58.68	46.2	13.36	71.6	58.18	65.6
16.9	44.73	63.7	55.87	24.5	58.85	45.2	13.58	68.8	58.36	63.8
26.9	45.11	60.7	57.44	22.4	59.06	44.0	13.85	66.0	58.57	61.8
Nov. 5.8	45.55	57.9	59.27	20.7	59.30	42.6	14.16	63.3	58.82	59.6
15.8	46.05	55.4	61.31	19.7	59.58	40.9	14.51	60.8	59.11	57.5
25.8	46.60	53.3	63.47	19.3	59.88	39.0	14.89	58.5	59.42	55.3
Dec. 5.8	47.17	51.6	65.68	19.6	60.19	37.0	15.30	56.5	59.75	53.2
15.7	47.76	50.4	67.87	20.5	60.51	35.0	15.72	54.9	60.09	51.2
25.7	48.34	49.8	69.95	22.1	60.83	32.9	16.14	53.7	60.43	49.4
35.7	48.91	49.8	71.87	24.2	61.13	30.9	16.54	53.0	60.75	47.9

FIXED STARS, 1903.

(CONSTANTS OF STRUVE AND PETERS.)

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APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	ν Ursæ Majoris.		δ Crateris.		τ Leonis.		λ Draconis.		ξ Hydræ.	
	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion South.
	h m II 13	° ' " +33 36	h m II 14	° ' " -14 15	h m II 22	° ' " + 3 23	h m II 25	° ' " +69 51	h m II 28	° ' " -31 19
Jan. 0.7	15.13	69.1	30.46	13.8	57.76	19.3	39.24	36.6	15.00	10.2
10.7	15.47	68.1	30.76	16.2	58.06	17.3	39.95	36.8	15.33	12.8
20.7	15.79	67.6	31.04	18.5	58.34	15.6	40.62	37.0	15.64	15.5
30.6	16.06	67.6	31.27	20.8	58.58	14.0	41.20	39.0	15.90	18.3
Feb. 9.6	16.29	68.0	31.46	22.9	58.78	12.7	41.69	40.9	16.11	21.1
19.6	16.46	68.7	31.61	24.9	58.94	11.7	42.07	43.2	16.28	23.9
Mar. 1.5	16.58	69.8	31.71	26.7	59.06	11.0	42.32	45.9	16.40	26.5
11.5	16.65	71.1	31.77	28.2	59.12	10.5	42.45	48.8	16.48	29.0
21.5	16.67	72.7	31.79	29.5	59.15	10.3	42.46	51.7	16.50	31.2
31.5	16.63	74.3	31.77	30.5	59.14	10.3	42.34	54.7	16.49	33.2
Apr. 10.4	16.56	76.0	31.72	31.3	59.10	10.5	42.13	57.4	16.44	34.9
20.4	16.46	77.6	31.64	31.8	59.04	10.8	41.81	60.0	16.37	36.3
30.4	16.33	79.2	31.55	32.1	58.95	11.3	41.42	62.2	16.27	37.4
May 10.4	16.19	80.6	31.44	32.2	58.85	11.9	40.98	64.0	16.15	38.2
20.3	16.03	81.7	31.32	32.0	58.74	12.6	40.50	65.4	16.02	38.7
30.3	15.87	82.7	31.20	31.6	58.63	13.2	39.99	66.2	15.87	38.8
June 9.3	15.72	83.3	31.08	31.1	58.52	13.9	39.48	66.5	15.73	38.6
19.2	15.57	83.7	30.96	30.4	58.41	14.6	38.98	66.3	15.58	38.1
29.2	15.43	83.8	30.85	29.5	58.30	15.3	38.50	65.6	15.44	37.3
July 9.2	15.31	83.5	30.75	28.5	58.21	15.9	38.06	64.3	15.30	36.2
19.2	15.20	83.0	30.66	27.4	58.12	16.5	37.67	62.6	15.17	34.9
29.2	15.12	82.2	30.58	26.3	58.05	17.0	37.33	60.5	15.06	33.4
Aug. 8.1	15.05	81.2	30.52	25.1	57.99	17.4	37.06	58.0	14.96	31.6
18.1	15.02	79.9	30.49	23.9	57.96	17.7	36.86	55.2	14.90	29.8
28.1	15.01	78.3	30.47	22.8	57.94	17.9	36.73	52.1	14.86	28.0
Sept. 7.0	15.04	76.5	30.49	21.8	57.96	17.8	36.69	48.8	14.85	26.2
17.0	15.10	74.6	30.54	21.0	58.00	17.6	36.74	45.4	14.88	24.4
27.0	15.20	72.4	30.63	20.4	58.08	17.1	36.88	41.8	14.96	22.9
Oct. 6.9	15.34	70.1	30.76	20.1	58.20	16.4	37.11	38.3	15.08	21.7
16.9	15.52	67.6	30.92	20.1	58.36	15.4	37.44	34.8	15.25	20.8
26.9	15.75	65.2	31.13	20.5	58.55	14.2	37.87	31.5	15.47	20.2
Nov. 5.9	16.01	62.7	31.38	21.2	58.78	12.7	38.38	28.4	15.73	20.1
15.8	16.32	60.2	31.65	22.3	59.04	11.0	38.97	25.6	16.02	20.5
25.8	16.65	57.9	31.95	23.8	59.33	9.1	39.63	23.3	16.35	21.4
Dec. 5.8	17.01	55.8	32.27	25.5	59.65	7.1	40.34	21.3	16.70	22.7
15.7	17.38	53.9	32.60	27.5	59.97	5.0	41.09	20.0	17.06	24.4
25.7	17.75	52.4	32.93	29.7	60.29	2.9	41.84	19.2	17.41	26.5
35.7	18.11	51.2	33.24	32.0	60.60	0.9	42.59	19.0	17.76	28.9

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	♌ Leonis.		♊ Ursæ Majoris.		♌ Leonis.		♊ Ursæ Majoris.		♍ Virginis.	
	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.
	h m 11 31	° ' " 017	h m 11 40	° ' " +48 18	h m 11 44	° ' " +15 06	h m 11 48	° ' " +54 13	h m 11 55	° ' " +7 08
	s	"	s	"	s	"	s	"	s	"
Jan. 0.7	59.73	22.4	56.13	43.0	7.34	41.7	44.00	42.6	54.72	72.0
10.7	60.04	24.4	56.56	42.3	7.66	40.0	44.47	42.0	55.03	70.1
20.7	60.32	26.3	56.95	42.2	7.96	38.6	44.91	42.0	55.33	68.4
30.6	60.57	28.1	57.30	42.6	8.22	37.5	45.31	42.6	55.60	66.9
Feb. 9.6	60.77	29.6	57.61	43.5	8.45	36.8	45.65	43.6	55.82	65.8
19.6	60.94	30.8	57.85	44.8	8.63	36.4	45.93	45.2	56.01	64.9
Mar. 1.6	61.06	31.7	58.03	46.6	8.77	36.3	46.14	47.2	56.16	64.4
11.5	61.14	32.4	58.14	48.6	8.86	36.5	46.27	49.5	56.26	64.1
21.5	61.18	32.9	58.18	50.9	8.91	37.0	46.33	52.0	56.32	64.1
31.5	61.18	33.1	58.17	53.2	8.92	37.7	46.32	54.6	56.35	64.4
Apr. 10.4	61.14	33.1	58.10	55.6	8.89	38.6	46.25	57.1	56.34	64.8
20.4	61.09	32.9	57.99	57.9	8.84	39.6	46.12	59.6	56.30	65.4
30.4	61.01	32.6	57.83	60.0	8.76	40.6	45.95	61.8	56.24	66.1
May 10.4	60.92	32.1	57.65	61.8	8.66	41.6	45.74	63.8	56.16	66.9
20.3	60.81	31.6	57.45	63.3	8.56	42.6	45.51	65.5	56.06	67.7
30.3	60.70	31.0	57.24	64.5	8.44	43.6	45.25	66.7	55.96	68.5
June 9.3	60.59	30.3	57.02	65.3	8.32	44.4	44.99	67.5	55.85	69.3
19.3	60.48	29.6	56.80	65.7	8.20	45.1	44.73	67.9	55.74	70.0
29.3	60.37	28.9	56.60	65.6	8.09	45.7	44.48	67.8	55.63	70.7
July 9.2	60.27	28.2	56.40	65.2	7.98	46.1	44.24	67.3	55.52	71.3
19.2	60.18	27.5	56.23	64.4	7.88	46.3	44.02	66.3	55.42	71.8
29.1	60.11	26.8	56.07	63.1	7.79	46.4	43.83	64.9	55.33	72.2
Aug. 8.1	60.04	26.2	55.94	61.5	7.72	46.3	43.66	63.2	55.25	72.4
18.1	60.00	25.8	55.85	59.6	7.66	46.0	43.54	61.0	55.19	72.5
28.1	59.98	25.5	55.79	57.4	7.63	45.5	43.45	58.6	55.15	72.4
Sept. 7.0	59.98	25.3	55.76	54.9	7.62	44.8	43.40	55.9	55.13	72.2
17.0	60.02	25.3	55.78	52.2	7.64	43.8	43.41	53.0	55.14	71.7
27.0	60.09	25.6	55.85	49.4	7.70	42.6	43.46	49.9	55.19	71.0
Oct. 7.0	60.19	26.1	55.97	46.4	7.80	41.2	43.58	46.6	55.27	70.0
16.9	60.34	26.8	56.15	43.3	7.93	39.6	43.76	43.3	55.39	68.8
26.9	60.53	27.9	56.38	40.2	8.11	37.7	44.00	40.1	55.56	67.4
Nov. 5.9	60.75	29.2	56.66	37.2	8.32	35.7	44.29	37.0	55.76	65.7
15.9	61.01	30.8	56.99	34.4	8.58	33.6	44.65	34.0	56.01	63.9
25.8	61.30	32.6	57.36	31.7	8.86	31.4	45.05	31.3	56.28	61.9
Dec. 5.8	61.61	34.5	57.76	29.4	9.17	29.2	45.49	28.9	56.58	59.8
15.8	61.93	36.6	58.19	27.5	9.50	27.1	45.96	26.9	56.90	57.6
25.7	62.25	38.7	58.63	26.0	9.83	25.0	46.44	25.5	57.23	55.5
35.7	62.56	40.8	59.06	25.0	10.16	23.2	46.92	24.6	57.55	53.5

FIXED STARS, 1903.
(CONSTANTS OF STRUVE AND PETERS.)

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APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Virginis.		ε Corvi.		4 Draconis (H.).		γ Corvi.		2 Canum Venat.	
	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion North.
	h m 12 00	° ' " + 9 15	h m 12 05	° ' " - 22 04	h m 12 07	° ' " + 78 08	h m 12 10	° ' " - 17 00	h m 12 11	° ' " + 41 11
Jan. 0.7	16.64	70.8	8.94	45.3	37.99	56.4	49.73	9.4	16.18	43.5
10.7	16.95	68.9	9.27	47.5	39.16	56.3	50.06	11.6	16.57	42.3
20.7	17.25	67.3	9.58	49.9	40.27	56.8	50.36	13.9	16.94	41.6
30.7	17.52	65.9	9.86	52.3	41.30	58.0	50.64	16.2	17.28	41.5
Feb. 9.6	17.75	64.8	10.11	54.7	42.21	59.7	50.88	18.4	17.58	41.8
19.6	17.95	64.1	10.31	57.0	42.95	61.9	51.09	20.4	17.84	42.7
Mar. 1.6	18.10	63.6	10.47	59.1	43.52	64.6	51.25	22.3	18.04	44.0
11.5	18.21	63.5	10.58	61.0	43.89	67.5	51.36	23.9	18.18	45.6
21.5	18.27	63.7	10.65	62.8	44.06	70.6	51.44	25.4	18.26	47.5
31.5	18.30	64.0	10.68	64.3	44.03	73.7	51.48	26.6	18.30	49.6
Apr. 10.5	18.29	64.6	10.68	65.6	43.80	76.8	51.49	27.6	18.28	51.8
20.4	18.26	65.3	10.65	66.6	43.40	79.7	51.46	28.3	18.22	54.0
30.4	18.20	66.1	10.60	67.4	42.84	82.3	51.42	28.8	18.12	56.1
May 10.4	18.12	67.0	10.52	67.9	42.16	84.5	51.35	29.1	18.00	58.0
20.4	18.02	67.9	10.43	68.2	41.37	86.2	51.26	29.2	17.85	59.7
30.3	17.92	68.8	10.32	68.2	40.50	87.5	51.16	29.1	17.69	61.2
June 9.3	17.81	69.6	10.21	68.0	39.59	88.2	51.06	28.8	17.51	62.3
19.3	17.70	70.3	10.08	67.6	38.66	88.4	50.94	28.3	17.33	63.0
29.2	17.59	71.0	9.96	67.0	37.74	88.0	50.82	27.7	17.15	63.4
July 9.2	17.48	71.6	9.83	66.2	36.85	87.0	50.70	26.9	16.98	63.4
19.2	17.38	72.0	9.71	65.1	36.02	85.6	50.59	26.0	16.81	63.1
29.2	17.28	72.3	9.60	64.0	35.26	83.7	50.48	25.0	16.66	62.3
Aug. 8.1	17.20	72.5	9.50	62.7	34.58	81.3	50.38	23.9	16.53	61.2
18.1	17.13	72.5	9.41	61.4	34.02	78.5	50.30	22.7	16.41	59.8
28.1	17.08	72.3	9.35	60.1	33.57	75.4	50.23	21.6	16.33	58.0
Sept. 7.1	17.06	71.9	9.31	58.8	33.25	72.1	50.20	20.6	16.27	55.9
17.0	17.07	71.3	9.31	57.6	33.08	68.5	50.19	19.7	16.25	53.6
27.0	17.11	70.5	9.35	56.6	33.06	64.8	50.22	18.9	16.28	51.0
Oct. 7.0	17.19	69.4	9.42	55.7	33.20	61.1	50.29	18.4	16.35	48.3
16.9	17.31	68.1	9.55	55.2	33.50	57.3	50.41	18.2	16.47	45.4
26.9	17.47	66.6	9.72	55.0	33.96	53.7	50.56	18.3	16.64	42.4
Nov. 5.9	17.67	64.8	9.93	55.2	34.58	50.3	50.77	18.7	16.86	39.4
15.9	17.91	62.9	10.19	55.8	35.36	47.2	51.01	19.5	17.13	36.4
25.8	18.18	60.8	10.48	56.7	36.27	44.4	51.29	20.6	17.45	33.6
Dec. 5.8	18.48	58.7	10.79	58.0	37.30	42.1	51.60	22.0	17.80	31.0
15.8	18.80	56.5	11.13	59.7	38.41	40.3	51.92	23.8	18.17	28.7
25.8	19.13	54.4	11.47	61.6	39.58	39.2	52.26	25.8	18.57	26.8
35.7	19.45	52.4	11.81	63.8	40.76	38.7	52.59	27.9	18.96	25.3

FIXED STARS, 1903.

(CONSTANTS OF STRUVE AND PETERS.)

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	β Chamaeleontis.		6 (B.) Ursæ Min.		η Virginis.		α^1 Crucis.		δ^2 Corvi.	
	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion South.
	h m 12 12	° ' -78 46	h m 12 13	° ' +88 13	h m 12 14	° ' - 00 07	h m 12 21	° ' -62 33	h m 12 24	° ' -15 58
Jan. 0.7	42.96 1.20	7.5 1.7	68.2 7.3	52.9 0.1	57.14 -32	43.4 2.0	13.68 -57	25.9 1.9	51.32 -33	28.9 2.1
10.7	44.16 1.12	9.2 2.2	75.5 6.9	53.0 0.6	57.46 -30	45.4 1.9	14.25 -54	27.8 2.3	51.65 -31	31.0 2.2
20.7	45.28 1.01	11.4 2.7	82.4 6.5	53.6 1.4	57.76 -27	47.3 1.8	14.79 -49	30.1 2.7	51.96 -29	33.2 2.2
30.7	46.29 0.87	14.1 3.1	88.9 5.7	55.0 1.8	58.03 -24	49.1 1.5	15.28 -43	32.8 3.1	52.25 -25	35.4 2.1
Feb. 9.6	47.16 0.71	17.2 3.4	94.6 4.8	56.8 2.4	58.27 -21	50.6 1.3	15.71 -35	35.9 3.3	52.50 -22	37.5 2.0
19.6	47.87 0.56	20.6 3.6	99.4 3.7	59.2 2.8	58.48 -16	51.9 1.0	16.06 -29	39.2 3.4	52.72 -17	39.5 1.8
Mar. 1.6	48.43 0.37	24.2 3.7	103.1 2.4	62.0 3.0	58.64 -12	52.9 0.7	16.35 -21	42.6 3.4	52.89 -13	41.3 1.6
11.5	48.80 0.21	27.9 3.8	105.5 1.0	65.0 3.2	58.76 -08	53.6 0.4	16.56 -14	46.0 3.5	53.02 -09	42.9 1.4
21.5	49.01 0.04	31.7 3.7	106.5 0.3	68.2 3.2	58.84 -04	54.0 0.2	16.70 -06	49.5 3.4	53.11 -06	44.3 1.2
31.5	49.05 0.12	35.4 3.6	106.2 1.6	71.4 3.1	58.88 -01	54.2 0.1	16.76 -01	52.9 3.2	53.17 -02	45.5 0.9
Apr. 10.5	48.93 0.29	39.0 3.4	104.6 2.8	74.5 2.9	58.89 -01	54.1 0.2	16.75 -07	56.1 3.0	53.19 -01	46.4 0.7
20.4	48.64 0.42	42.4 3.2	101.8 3.9	77.4 2.5	58.88 -05	53.9 0.4	16.68 -12	59.1 2.7	53.18 -03	47.1 0.5
30.4	48.22 0.56	45.6 2.8	97.9 4.9	79.9 2.2	58.83 -06	53.5 0.5	16.56 -18	61.8 2.3	53.15 -06	47.6 0.2
May 10.4	47.66 0.68	48.4 2.4	93.0 5.6	82.1 1.7	58.77 -08	53.0 0.5	16.38 -23	64.1 2.0	53.09 -07	47.8 0.1
20.4	46.98 0.77	50.8 2.0	87.4 6.2	83.8 1.1	58.69 -09	52.5 0.7	16.15 -27	66.1 1.6	53.02 -10	47.9 0.1
30.3	46.21 0.86	52.8 1.4	81.2 6.6	84.9 0.7	58.60 -10	51.8 0.7	15.88 -30	67.7 1.1	52.92 -10	47.8 0.3
June 9.3	45.35 0.92	54.2 1.0	74.6 6.8	85.6 0.0	58.50 -11	51.1 0.7	15.58 -33	68.8 0.6	52.82 -11	47.5 0.4
19.3	44.43 0.95	55.2 0.4	67.8 6.7	85.6 0.5	58.39 -11	50.4 0.7	15.25 -34	69.4 0.2	52.71 -11	47.1 0.6
29.2	43.48 0.97	55.6 0.1	61.1 6.6	85.1 1.1	58.28 -11	49.7 0.7	14.91 -35	69.6 0.3	52.60 -12	46.5 0.7
July 9.2	42.51 0.95	55.5 0.7	54.5 6.2	84.0 1.6	58.17 -11	49.0 0.6	14.56 -35	69.3 0.9	52.48 -12	45.8 0.9
19.2	41.56 0.90	54.8 1.2	48.3 5.7	82.4 2.1	58.06 -10	48.4 0.6	14.21 -34	68.4 1.2	52.36 -11	44.9 0.9
29.2	40.66 0.82	53.6 1.7	42.6 5.1	80.3 2.6	57.96 -09	47.8 0.6	13.87 -31	67.2 1.7	52.25 -11	44.0 1.0
Aug. 8.1	39.84 0.72	51.9 2.2	37.5 4.4	77.7 2.9	57.87 -07	47.2 0.4	13.56 -27	65.5 2.1	52.14 -09	43.0 1.1
18.1	39.12 0.59	49.7 2.5	33.1 3.5	74.8 3.2	57.80 -06	46.8 0.3	13.29 -22	63.4 2.4	52.05 -08	41.9 1.0
28.1	38.53 0.42	47.2 2.9	29.6 2.6	71.6 3.5	57.74 -04	46.5 0.1	13.07 -16	61.0 2.6	51.97 -05	40.9 0.9
Sept. 7.1	38.11 0.24	44.3 3.0	27.0 1.6	68.1 3.7	57.70 -01	46.4 0.0	12.91 -09	58.4 2.8	51.92 -02	40.0 0.9
17.0	37.87 0.04	41.3 3.1	25.4 0.7	64.4 3.7	57.69 -03	46.4 0.3	12.82 -01	55.6 2.8	51.90 -02	39.1 0.7
27.0	37.83 0.17	38.2 3.1	24.7 0.5	60.7 3.8	57.72 -07	46.7 0.5	12.81 -08	52.8 2.6	51.92 -06	38.4 0.4
Oct. 7.0	38.00 0.38	35.1 2.9	25.2 1.5	56.9 3.8	57.79 -10	47.2 0.8	12.89 -17	50.2 2.6	51.98 -10	38.0 0.2
16.9	38.38 0.59	32.2 2.6	26.7 2.5	53.1 3.6	57.89 -15	48.0 1.0	13.06 -27	47.6 2.2	52.08 -14	37.8 0.1
26.9	38.97 0.78	29.6 2.2	29.2 3.5	49.5 3.4	58.04 -19	49.0 1.3	13.33 -35	45.4 1.8	52.22 -19	37.9 0.5
Nov. 5.9	39.75 0.94	27.4 1.8	32.7 4.6	46.1 3.0	58.23 -23	50.3 1.6	13.68 -43	43.6 1.3	52.41 -23	38.4 0.7
15.9	40.69 1.07	25.6 1.2	37.3 5.4	43.1 2.7	58.46 -26	51.9 1.7	14.11 -49	42.3 0.8	52.64 -27	39.1 1.1
25.8	41.76 1.18	24.4 0.6	42.7 6.1	40.4 2.1	58.72 -30	53.6 2.0	14.60 -55	41.5 0.2	52.91 -30	40.2 1.5
Dec. 5.8	42.94 1.23	23.8 0.0	48.8 6.7	38.3 1.7	59.02 -31	55.6 2.0	15.15 -57	41.3 0.4	53.21 -32	41.7 1.7
15.8	44.17 1.26	23.8 0.7	55.5 7.1	36.6 1.0	59.33 -32	57.6 2.1	15.72 -59	41.7 0.9	53.53 -34	43.4 1.9
25.8	45.43 1.23	24.5 1.2	62.6 7.3	35.6 0.3	59.65 -32	59.7 2.1	16.31 -58	42.6 1.6	53.87 -33	45.3 2.1
35.7	46.66	25.7	69.9	35.3	59.97	61.8	16.89	44.2	54.20	47.4

FIXED STARS, 1903.

(CONSTANTS OF STRUVE AND PETERS.)

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APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	β Canum Venat.		β Corvi.		κ Draconis.		γ Virginis (mean).		ζ Comæ Berenices.	
	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion North.
	h m 12 29	° +41 52	h m 12 29	° -22 51	h m 12 29	° +70 18	h m 12 36	° - 0 55	h m 12 46	° +28 03
	s	"	s	"	s	"	s	"	s	"
Jan. 0.7	8.24	48.0	18.11	32.1	19.57	61.2	45.16	5.0	58.47	55.0
10.7	8.63	46.7	18.45	34.3	20.32	60.5	45.48	7.0	58.82	53.2
20.7	9.01	45.9	18.77	36.5	21.06	60.6	45.78	9.0	59.16	51.8
30.7	9.37	45.6	19.06	38.9	21.74	61.2	46.07	10.7	59.47	50.9
Feb. 9.6	9.68	45.9	19.33	41.2	22.35	62.5	46.32	12.3	59.76	50.5
19.6	9.95	46.6	19.55	43.4	22.88	64.3	46.54	13.6	60.02	50.5
Mar. 1.6	10.17	47.8	19.74	45.5	23.30	66.6	46.72	14.6	60.22	51.0
11.6	10.33	49.4	19.88	47.5	23.60	69.3	46.86	15.4	60.39	51.8
21.5	10.44	51.4	19.98	49.2	23.78	72.2	46.97	15.9	60.51	53.0
31.5	10.49	53.5	20.04	50.8	23.84	75.2	47.03	16.1	60.58	54.5
Apr. 10.5	10.49	55.8	20.06	52.1	23.78	78.3	47.06	16.1	60.62	56.1
20.4	10.45	58.1	20.06	53.2	23.62	81.3	47.06	15.9	60.62	57.9
30.4	10.37	60.3	20.03	54.1	23.35	84.0	47.04	15.5	60.58	59.7
May 10.4	10.26	62.4	19.97	54.7	23.00	86.4	46.99	15.1	60.52	61.4
20.4	10.12	64.3	19.90	55.1	22.58	88.5	46.93	14.5	60.43	63.1
30.3	9.96	65.9	19.80	55.2	22.12	90.1	46.85	13.8	60.32	64.6
June 9.3	9.79	67.2	19.70	55.2	21.61	91.2	46.75	13.2	60.20	65.9
19.3	9.61	68.1	19.58	54.9	21.09	91.8	46.65	12.5	60.07	67.0
29.3	9.42	68.6	19.46	54.4	20.55	91.9	46.54	11.8	59.93	67.8
July 9.2	9.23	68.8	19.33	53.7	20.03	91.4	46.43	11.0	59.79	68.3
19.2	9.05	68.6	19.20	52.8	19.52	90.5	46.32	10.4	59.65	68.5
29.2	8.88	68.0	19.08	51.8	19.05	89.0	46.20	9.8	59.51	68.4
Aug. 8.1	8.73	67.0	18.96	50.6	18.63	87.0	46.10	9.2	59.38	68.0
18.1	8.59	65.6	18.86	49.3	18.25	84.7	46.01	8.8	59.26	67.3
28.1	8.48	63.9	18.77	48.0	17.94	81.9	45.93	8.5	59.16	66.3
Sept. 7.1	8.40	61.9	18.72	46.8	17.70	78.9	45.87	8.3	59.08	65.0
17.0	8.36	59.6	18.69	45.6	17.55	75.5	45.84	8.3	59.03	63.4
27.0	8.36	57.0	18.70	44.5	17.48	72.0	45.85	8.5	59.02	61.5
Oct. 7.0	8.40	54.2	18.75	43.7	17.52	68.3	45.89	9.0	59.05	59.4
17.0	8.49	51.3	18.85	43.1	17.65	64.6	45.97	9.7	59.12	57.1
26.9	8.63	48.2	19.00	42.8	17.89	60.9	46.10	10.6	59.23	54.5
Nov. 5.9	8.83	45.1	19.19	42.8	18.24	57.4	46.27	11.9	59.39	51.9
15.9	9.08	42.1	19.43	43.2	18.68	54.0	46.48	13.4	59.60	49.2
25.8	9.38	39.1	19.71	44.0	19.22	50.9	46.73	15.1	59.86	46.4
Dec. 5.8	9.72	36.4	20.02	45.2	19.85	48.3	47.01	17.0	60.15	43.8
15.8	10.09	34.0	20.35	46.7	20.54	46.1	47.32	19.0	60.47	41.2
25.8	10.48	31.9	20.69	48.4	21.27	44.4	47.64	21.1	60.82	38.9
35.7	10.87	30.3	21.03	50.5	22.02	43.4	47.96	23.2	61.16	37.0

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	32° Camelop. (H.).		α Canum Venat.		δ Muscæ.		ε Virginis.		η Virginis.	
	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion South.
	h m 12 48	° +83 55	h m 12 51	° +38 49	h m 12 55	° -71 01	h m 12 57	° +11 28	h m 13 04	° - 5 01
	s	"	s	"	s	"	s	"	s	"
Jan. 0.8	18.15	63.5	29.28	77.4	37.26	14.1	21.06	43.8	55.90	16.0
10.7	20.31	63.0	29.66	75.7	38.06	15.4	21.39	41.8	56.22	18.1
20.7	22.46	63.1	30.04	74.6	38.84	17.1	21.70	40.0	56.54	20.0
30.7	24.51	63.8	30.39	74.0	39.56	19.3	22.00	38.6	56.83	21.9
Feb. 9.7	26.39	65.2	30.71	74.0	40.22	22.0	22.27	37.4	57.11	23.6
	1.65	2.0	2.8	0.4	5.8	3.1	2.4	0.7	2.4	1.4
19.6	28.04	67.2	30.99	74.4	40.80	25.1	22.51	36.7	57.35	25.0
Mar. 1.6	29.39	69.6	31.22	75.4	41.28	28.3	22.71	36.3	57.55	26.3
11.6	30.40	72.8	31.41	76.8	41.67	31.8	22.88	36.2	57.72	27.2
21.5	31.03	75.5	31.54	78.5	41.95	35.3	23.00	36.5	57.85	27.9
31.5	31.28	78.6	31.62	80.5	42.14	38.8	23.08	37.0	57.95	28.4
	0.14	3.2	0.4	2.1	0.9	3.5	0.6	0.8	0.6	0.2
Apr. 10.5	31.14	81.8	31.66	82.6	42.23	42.3	23.14	37.8	58.01	28.6
20.5	30.63	84.9	31.65	84.9	42.23	45.6	23.15	38.7	58.04	28.6
30.4	29.78	87.8	31.60	87.1	42.13	48.7	23.14	39.7	58.04	28.5
May 10.4	28.62	90.3	31.52	89.3	41.94	51.6	23.10	40.8	58.02	28.2
20.4	27.21	92.4	31.41	91.2	41.68	54.1	23.05	42.0	57.98	27.8
	1.61	1.7	1.3	1.8	3.4	2.2	0.8	1.1	0.6	0.5
30.4	25.60	94.1	31.28	93.0	41.34	56.3	22.97	43.1	57.92	27.3
June 9.3	23.82	95.2	31.12	94.4	40.95	58.0	22.88	44.1	57.84	26.7
19.3	21.94	95.8	30.96	95.6	40.49	59.3	22.78	45.1	57.75	26.0
29.3	20.01	95.8	30.79	96.4	40.00	60.0	22.67	45.9	57.64	25.4
July 9.2	18.08	95.3	30.61	96.8	39.48	60.3	22.55	46.6	57.53	24.7
	1.87	1.0	1.7	0.0	5.4	0.3	1.2	0.5	1.1	0.7
19.2	16.21	94.3	30.44	96.8	38.94	60.0	22.43	47.1	57.42	24.0
29.2	14.42	92.7	30.26	96.4	38.41	59.2	22.31	47.5	57.30	23.4
Aug. 8.2	12.77	90.6	30.10	95.7	37.89	57.9	22.19	47.7	57.18	22.8
18.1	11.29	88.1	29.96	94.6	37.42	56.2	22.08	47.6	57.07	22.2
28.1	10.02	85.2	29.83	93.1	37.01	54.0	21.99	47.4	56.97	21.7
	1.05	3.2	1.0	1.8	3.3	2.4	0.8	0.4	0.8	0.3
Sept. 7.1	8.97	82.0	29.73	91.3	36.68	51.6	21.91	47.0	56.89	21.4
17.1	8.19	78.6	29.66	89.3	36.45	48.8	21.86	46.3	56.84	21.2
27.0	7.68	74.9	29.63	86.9	36.32	45.9	21.84	45.4	56.82	21.1
Oct. 7.0	7.48	71.1	29.65	84.2	36.32	43.0	21.86	44.2	56.83	21.3
17.0	7.59	67.3	29.71	81.4	36.45	40.1	21.92	42.8	56.89	21.7
	0.44	3.8	1.1	3.0	2.6	2.6	1.1	1.7	1.0	0.7
26.9	8.03	63.5	29.82	78.4	36.71	37.5	22.03	41.1	56.99	22.4
Nov. 5.9	8.79	59.9	29.99	75.4	37.10	35.1	22.18	39.2	57.14	23.4
15.9	9.87	56.5	30.21	72.3	37.61	33.2	22.37	37.1	57.33	24.6
25.9	11.25	53.4	30.48	69.3	38.22	31.7	22.60	34.9	57.56	26.1
Dec. 5.8	12.89	50.8	30.78	66.4	38.92	30.8	22.87	32.7	57.83	27.8
	1.87	2.2	3.5	2.6	7.6	0.4	3.0	2.3	3.0	1.8
15.8	14.76	48.6	31.13	63.8	39.68	30.4	23.17	30.4	58.13	29.6
25.8	16.80	47.0	31.50	61.5	40.47	30.7	23.49	28.1	58.44	31.6
35.8	18.94	46.1	31.88	59.6	41.27	31.6	23.81	26.0	58.76	33.7
	2.04	1.6	3.7	2.3	7.9	0.3	3.2	2.3	3.2	2.1
	2.14	0.9	3.8	1.9	8.0	0.9	3.2	2.1	3.2	2.1

FIXED STARS, 1903.

(CONSTANTS OF STRUVE AND PETERS.)

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APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	20 Canum Venat.		α Virginis. (Spica.)		κ Octantis.		ζ Virginis.		B. A. C. 4536.	
	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion North.
	h m 13 13	° +41 04	h m 13 20	° -10 39	h m 13 25	° -85 17	h m 13 29	° - 0 06	h m 13 30	° +37 40
Jan. 0.8	11.27	45.8	5.17	15.3	13.28	0.3	45.08	0.5	27.55	33.3
10.8	11.66	44.0	5.50	17.2	16.22	0.7	45.40	2.5	27.92	31.4
20.7	12.04	42.7	5.82	19.2	19.13	1.8	45.72	4.4	28.29	29.9
30.7	12.41	42.0	6.13	21.1	21.91	3.4	46.02	6.1	28.65	28.9
Feb. 9.7	12.75	41.8	6.41	22.9	24.52	5.6	46.30	7.7	28.98	28.5
19.6	13.06	42.2	6.67	24.6	26.87	8.2	46.56	8.9	29.29	28.6
Mar. 1.6	13.32	43.2	6.88	26.0	28.94	11.2	46.78	9.9	29.56	29.3
11.6	13.53	44.5	7.07	27.3	30.66	14.4	46.97	10.6	29.78	30.4
21.6	13.69	46.3	7.22	28.3	32.04	17.9	47.13	11.0	29.96	32.0
31.6	13.80	48.4	7.33	29.1	33.02	21.5	47.24	11.2	30.08	33.9
Apr. 10.5	13.86	50.6	7.41	29.6	33.62	25.2	47.33	11.1	30.17	36.0
20.5	13.88	53.0	7.46	30.0	33.82	28.9	47.38	10.8	30.21	38.3
30.5	13.85	55.4	7.47	30.1	33.63	32.4	47.41	10.3	30.20	40.6
May 10.4	13.79	57.7	7.47	30.1	33.05	35.8	47.40	9.7	30.17	42.9
20.4	13.69	59.9	7.44	30.0	32.10	38.9	47.38	9.0	30.10	45.1
30.4	13.57	61.9	7.39	29.7	30.80	41.7	47.33	8.3	30.00	47.1
June 9.3	13.42	63.5	7.32	29.3	29.20	44.1	47.27	7.5	29.87	48.9
19.3	13.25	64.9	7.23	28.9	27.32	46.1	47.19	6.7	29.73	50.4
29.3	13.07	65.8	7.13	28.3	25.21	47.6	47.09	6.0	29.57	51.5
July 9.3	12.89	66.4	7.02	27.7	22.94	48.6	46.98	5.2	29.40	52.3
19.2	12.69	66.6	6.90	27.1	20.56	49.0	46.86	4.6	29.21	52.6
29.2	12.50	66.3	6.77	26.3	18.16	48.8	46.74	4.0	29.03	52.7
Aug. 8.2	12.32	65.7	6.65	25.6	15.81	48.0	46.61	3.5	28.85	52.2
18.2	12.15	64.7	6.53	24.9	13.58	46.7	46.49	3.1	28.67	51.5
28.1	11.99	63.3	6.42	24.2	11.57	44.9	46.37	2.8	28.52	50.3
Sept. 7.1	11.86	61.5	6.32	23.6	9.84	42.7	46.28	2.7	28.38	48.8
17.1	11.76	59.4	6.26	23.2	8.48	40.0	46.20	2.7	28.26	46.9
27.0	11.70	57.0	6.22	22.8	7.53	37.1	46.15	3.0	28.19	44.7
Oct. 7.0	11.68	54.3	6.22	22.7	7.06	34.0	46.14	3.4	28.15	42.2
17.0	11.71	51.4	6.26	22.7	7.08	30.9	46.17	4.1	28.16	39.4
27.0	11.80	48.3	6.35	23.1	7.62	27.8	46.25	5.1	28.22	36.5
Nov. 5.9	11.94	45.1	6.49	23.7	8.66	24.9	46.37	6.3	28.34	33.4
15.9	12.13	41.9	6.67	24.5	10.17	22.2	46.53	7.7	28.51	30.3
25.9	12.38	38.7	6.89	25.7	12.12	20.1	46.74	9.4	28.73	27.1
Dec. 5.9	12.68	35.7	7.16	27.1	14.43	18.4	46.99	11.2	29.00	24.1
15.8	13.02	32.9	7.45	28.8	17.02	17.2	47.28	13.2	29.32	21.2
25.8	13.38	30.5	7.77	30.6	19.81	16.6	47.58	15.3	29.66	18.6
35.8	13.76	28.4	8.09	32.5	22.71	16.7	47.90	17.3	30.03	16.4

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Virginis.		η Ursæ Majoris.		η Bootis.		θ Apodis.		β Centauri.	
	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion South.
	h m 13 36	° ' " - 8 12	h m 13 43	° ' " +49 47	h m 13 50	° ' " +18 52	h m 13 55	° ' " -76 19	h m 13 56	° ' " -59 54
Jan. 0.8	31.33	46.4	42.24	35.9	3.72	56.0	52.58	22.9	58.97	0.5
10.8	31.65	48.3	42.67	33.9	4.05	53.9	53.67	23.1	59.53	1.2
20.8	31.97	50.2	43.10	32.6	4.37	52.0	54.76	23.9	60.10	2.3
30.7	32.28	52.1	43.52	31.8	4.69	50.5	55.84	25.2	60.64	3.9
Feb. 9.7	32.57	53.8	43.92	31.6	4.99	49.4	56.86	27.1	61.17	5.8
19.7	32.83	55.3	44.29	32.0	5.27	48.8	57.81	29.4	61.65	8.1
Mar. 1.6	33.06	56.6	44.61	33.0	5.52	48.6	58.66	32.0	62.08	10.7
11.6	33.26	57.7	44.89	34.6	5.73	48.8	59.42	35.0	62.47	13.5
21.6	33.42	58.6	45.11	36.6	5.90	49.3	60.05	38.2	62.79	16.4
31.6	33.55	59.2	45.27	38.9	6.04	50.2	60.56	41.5	63.05	19.3
Apr. 10.5	33.64	59.6	45.38	41.5	6.15	51.4	60.93	44.9	63.26	22.3
20.5	33.71	59.7	45.43	44.2	6.22	52.8	61.18	48.3	63.40	25.2
30.5	33.74	59.7	45.42	47.0	6.25	54.4	61.28	51.7	63.48	28.0
May 10.5	33.75	59.6	45.37	49.7	6.26	56.0	61.26	54.9	63.51	30.6
20.4	33.74	59.3	45.27	52.2	6.23	57.6	61.10	57.9	63.47	33.0
30.4	33.70	58.9	45.13	54.5	6.19	59.2	60.82	60.7	63.38	35.1
June 9.4	33.64	58.4	44.96	56.5	6.12	60.6	60.42	63.1	63.24	37.0
19.3	33.56	57.9	44.77	58.2	6.03	61.9	59.91	65.1	63.05	38.5
29.3	33.46	57.3	44.55	59.4	5.92	63.0	59.31	66.7	62.82	39.6
July 9.3	33.36	56.7	44.31	60.2	5.80	63.9	58.63	67.8	62.54	40.2
19.3	33.24	56.0	44.07	60.6	5.66	64.6	57.89	68.4	62.24	40.4
29.2	33.11	55.4	43.82	60.5	5.52	65.0	57.12	68.5	61.92	40.2
Aug. 8.2	32.98	54.8	43.57	59.9	5.38	65.2	56.33	68.0	61.59	39.6
18.2	32.85	54.1	43.32	58.9	5.23	65.1	55.56	67.0	61.26	38.5
28.2	32.74	53.6	43.10	57.4	5.10	64.6	54.84	65.5	60.95	37.0
Sept 7.1	32.63	53.1	42.90	55.5	4.97	64.1	54.20	63.5	60.68	35.2
17.1	32.53	52.8	42.73	53.2	4.87	63.1	53.66	61.1	60.45	33.0
27.1	32.50	52.6	42.60	50.6	4.80	61.9	53.26	58.5	60.28	30.7
Oct. 7.0	32.48	52.5	42.52	47.7	4.76	60.4	53.01	55.6	60.18	28.2
17.0	32.51	52.7	42.50	44.5	4.76	58.6	52.93	52.6	60.16	25.7
27.0	32.58	53.2	42.53	41.2	4.80	56.6	53.03	49.7	60.24	23.3
Nov. 6.0	32.70	53.9	42.63	37.7	4.90	54.3	53.32	46.9	60.40	21.1
15.9	32.86	54.9	42.80	34.2	5.04	51.9	53.78	44.3	60.65	19.1
25.9	33.07	56.1	43.03	30.7	5.23	49.3	54.42	42.1	60.99	17.6
Dec. 5.9	33.32	57.6	43.32	27.4	5.47	46.7	55.20	40.3	61.41	16.4
15.8	33.60	59.2	43.66	24.4	5.74	44.2	56.11	39.0	61.88	15.7
25.8	33.91	61.1	44.04	21.7	6.05	41.7	57.11	38.3	62.40	15.5
35.8	34.23	63.0	44.45	19.4	6.39	39.4	58.17	38.1	62.95	15.9

FIXED STARS, 1903.

(CONSTANTS OF STRUVE AND PETERS.)

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APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	♌ Hydra.		♐ Draconis.		♉ Bootis.		♍ Virginis.		♋ Ursæ Minoris.	
	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion North.
	h m 14 00	° -26 12	h m 14 01	° +64 49	h m 14 05	° +25 32	h m 14 07	° - 9 49	h m 14 09	° +77 59
	s	"	s	"	s	"	s	"	s	"
Jan. 0.8	50.90	45.4	43.75	66.2	58.18	56.6	43.20	16.1	8.05	55.7
10.8	51.25 .35	46.9 1.5	44.32 .57	64.3 1.9	58.50 .32	54.4 2.2	43.52 .32	17.9 1.8	9.09 1.04	54.0 1.7
20.8	51.60 .35	48.6 1.7	44.91 .60	63.0 1.3	58.84 .34	52.5 1.9	43.84 .31	19.7 1.8	10.19 1.12	52.8 1.2
30.7	51.95 .35	50.4 1.8	45.51 .57	62.3 0.7	59.17 .32	51.0 1.5	44.15 .31	21.5 1.8	11.31 1.11	52.3 0.5
Feb. 9.7	52.27 .32	52.3 1.9	46.08 .54	62.3 0.0	59.49 .29	50.0 1.0	44.46 .28	23.2 1.7	12.42 1.05	52.5 0.2
	52.27 .30	52.3 1.9		62.3 0.7		50.0 0.5		23.2 1.5		52.5 0.9
19.7	52.57 .27	54.2 1.8	46.62 .49	63.0 1.3	59.78 .27	49.5 0.0	44.74 .25	24.7 1.2	13.47 0.95	53.4 1.5
Mar. 1.7	52.84 .24	56.0 1.8	47.11 .42	64.3 1.8	60.05 .23	49.5 0.4	44.99 .23	25.9 1.1	14.42 0.82	54.9 2.0
11.6	53.08 .20	57.8 1.7	47.53 .34	66.1 2.3	60.28 .19	49.9 0.9	45.22 .19	27.0 0.9	15.24 0.66	56.9 2.5
21.6	53.28 .16	59.5 1.5	47.87 .25	68.4 2.7	60.47 .16	50.8 1.2	45.41 .15	27.9 0.6	15.90 0.50	59.4 2.8
31.6	53.44 .14	61.0 1.4	48.12 .17	71.1 2.9	60.63 .12	52.0 1.6	45.56 .13	28.5 0.5	16.40 0.31	62.2 3.1
Apr. 10.5	53.58 .10	62.4 1.2	48.29 .08	74.0 3.1	60.75 .08	53.6 1.7	45.69 .10	29.0 0.2	16.71 0.13	65.3 3.2
20.5	53.68 .06	63.6 1.1	48.37 .01	77.1 3.1	60.83 .05	55.3 1.9	45.79 .07	29.2 0.0	16.84 0.07	68.5 3.2
30.5	53.74 .04	64.7 0.8	48.36 .09	80.2 3.1	60.88 .02	57.2 2.0	45.86 .03	29.2 0.0	16.77 0.24	71.7 3.1
May 10.5	53.78 .01	65.5 0.8	48.27 .17	83.3 2.8	60.90 .02	59.2 2.0	45.89 .01	29.2 0.3	16.53 0.40	74.8 2.9
20.4	53.79 .03	66.3 0.5	48.10 .23	86.1 2.6	60.88 .04	61.2 1.8	45.90 .01	28.9 0.3	16.13 0.55	77.7 2.6
30.4	53.76 .04	66.8 0.4	47.87 .29	88.7 2.2	60.84 .07	63.0 1.8	45.89 .04	28.6 0.4	15.58 0.69	80.3 2.2
June 9.4	53.72 .08	67.2 0.1	47.58 .34	90.9 1.8	60.77 .10	64.8 1.5	45.85 .06	28.2 0.5	14.89 0.79	82.5 1.7
19.4	53.64 .09	67.3 0.0	47.24 .38	92.7 1.4	60.67 .11	66.3 1.4	45.79 .08	27.7 0.5	14.10 0.88	84.2 1.3
29.3	53.55 .12	67.3 0.2	46.86 .41	94.1 0.8	60.56 .13	67.7 1.0	45.71 .10	27.2 0.6	13.22 0.94	85.5 0.7
July 9.3	53.43 .13	67.1 0.4	46.45 .43	94.9 0.3	60.43 .15	68.7 0.8	45.61 .11	26.6 0.6	12.28 0.97	86.2 0.2
19.3	53.30 .15	66.7 0.6	46.02 .44	95.2 0.2	60.28 .15	69.5 0.4	45.50 .13	26.0 0.6	11.31 0.99	86.4 0.3
29.2	53.15 .15	66.1 0.7	45.58 .43	95.0 0.7	60.13 .17	69.9 0.2	45.37 .14	25.4 0.6	10.32 0.99	86.1 0.9
Aug. 8.2	53.00 .16	65.4 0.8	45.15 .43	94.3 1.2	59.96 .16	70.1 0.2	45.23 .14	24.8 0.6	9.33 0.96	85.2 1.4
18.2	52.84 .15	64.6 1.0	44.72 .40	93.1 1.6	59.80 .15	69.9 0.5	45.09 .13	24.2 0.6	8.37 0.90	83.8 1.9
28.2	52.69 .13	63.6 1.1	44.32 .36	91.5 2.2	59.65 .15	69.4 0.9	44.96 .13	23.6 0.5	7.47 0.83	81.9 2.3
Sept. 7.1	52.56 .12	62.5 1.1	43.96 .32	89.3 2.6	59.50 .12	68.5 1.2	44.83 .11	23.1 0.4	6.64 0.74	79.6 2.8
17.1	52.44 .08	61.4 1.0	43.64 .26	86.7 2.9	59.38 .10	67.3 1.5	44.72 .08	22.7 0.2	5.90 0.62	76.8 3.0
27.1	52.36 .04	60.4 1.0	43.38 .20	83.8 3.2	59.28 .06	65.8 1.8	44.64 .04	22.5 0.1	5.28 0.49	73.8 3.4
Oct. 7.1	52.32 .00	59.4 0.9	43.18 .12	80.6 3.5	59.22 .02	64.0 2.1	44.60 .01	22.4 0.0	4.79 0.34	70.4 3.6
17.0	52.32 .05	58.5 0.7	43.06 .02	77.1 3.7	59.20 .02	61.9 2.3	44.59 .04	22.4 0.3	4.45 0.17	66.8 3.8
27.0	52.37 .11	57.8 0.4	43.04 .06	73.4 3.8	59.22 .08	59.6 2.5	44.63 .09	22.7 0.6	4.28 0.01	63.0 3.8
Nov. 6.0	52.48 .16	57.4 0.2	43.10 .16	69.6 3.7	59.30 .12	57.1 2.7	44.72 .14	23.3 0.8	4.29 0.19	59.2 3.8
15.9	52.64 .21	57.2 0.2	43.26 .25	65.9 3.7	59.42 .18	54.4 2.9	44.86 .18	24.1 1.0	4.48 0.38	55.4 3.7
25.9	52.85 .25	57.4 0.4	43.51 .34	62.2 3.5	59.60 .22	51.5 2.8	45.04 .23	25.1 1.3	4.86 0.56	51.7 3.4
Dec. 5.9	53.10 .30	57.8 0.8	43.85 .42	58.7 3.1	59.82 .26	48.7 2.8	45.27 .27	26.4 1.5	5.42 0.72	48.3 3.1
15.9	53.40 .32	58.6 1.1	44.27 .50	55.6 2.8	60.08 .30	45.9 2.7	45.54 .29	27.9 1.7	6.14 0.87	45.2 2.7
25.8	53.72 .35	59.7 1.4	44.77 .55	52.8 2.3	60.38 .32	43.2 2.4	45.83 .32	29.6 1.8	7.01 0.99	42.5 2.1
35.8	54.07 .35	61.1 1.4	45.32 .55	50.5 2.3	60.70 .32	40.8 2.4	46.15 .32	31.4 1.8	8.00 0.99	40.4 2.1

FIXED STARS, 1903.

(CONSTANTS OF STRUVE AND PETERS.)

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	♑ Octantis.		α Bootis. (Arcturus.)		λ Bootis.		λ Virginis.		θ Bootis.	
	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion North.
	h m 14 11	° ' -83 13	h m 14 11	° ' +19 40	h m 14 12	° ' +46 31	h m 14 13	° ' -12 55	h m 14 21	° ' +52 17
Jan. 0.8	20.03 s	4.6 "	13.82 s	69.2 "	40.80 s	49.2 "	51.53 s	23.5 "	52.37 s	44.1 "
10.8	22.11 2.08	4.4 0.2	14.14 0.32	66.9 2.3	41.19 0.39	46.9 2.3	51.86 0.33	25.2 1.7	52.78 0.41	41.8 2.3
20.8	24.23 2.12	4.8 0.4	14.46 0.32	64.9 2.0	41.59 0.40	45.2 1.7	52.18 0.32	27.0 1.8	53.22 0.44	40.0 1.8
30.7	26.33 2.10	5.8 1.0	14.78 0.32	63.3 1.6	42.00 0.41	44.0 1.2	52.50 0.32	28.8 1.8	53.66 0.44	38.8 1.2
Feb. 9.7	28.36 1.91	7.3 2.0	15.09 0.28	62.1 0.7	42.39 0.36	43.5 0.0	52.81 0.29	30.4 1.6	54.09 0.41	38.3 0.1
19.7	30.27 1.76	9.3 2.5	15.37 0.26	61.4 0.3	42.75 0.33	43.5 0.7	53.10 0.25	32.0 1.4	54.50 0.37	38.4 0.7
Mar. 1.7	32.03 1.56	11.8 2.8	15.63 0.23	61.1 0.1	43.08 0.30	44.2 1.2	53.35 0.23	33.4 1.2	54.87 0.33	39.1 1.3
11.6	33.59 1.34	14.6 3.1	15.86 0.19	61.2 0.5	43.38 0.24	45.4 1.7	53.58 0.20	34.6 1.0	55.20 0.28	40.4 1.9
21.6	34.93 1.10	17.7 3.3	16.05 0.16	61.7 0.9	43.62 0.19	47.1 2.1	53.78 0.17	35.6 0.8	55.48 0.22	42.3 2.2
31.6	36.03 0.84	21.0 3.4	16.21 0.12	62.6 1.2	43.81 0.14	49.2 2.4	53.95 0.13	36.4 0.6	55.70 0.16	44.5 2.6
Apr. 10.5	36.87 0.57	24.4 3.5	16.33 0.09	63.8 1.4	43.95 0.09	51.6 2.7	54.08 0.11	37.0 0.4	55.86 0.11	47.1 2.8
20.5	37.44 0.30	27.9 3.5	16.42 0.05	65.2 1.6	44.04 0.04	54.3 2.7	54.19 0.07	37.4 0.2	55.97 0.05	49.9 2.9
30.5	37.74 0.02	31.4 3.4	16.47 0.03	66.8 1.6	44.08 0.00	57.0 2.8	54.26 0.05	37.6 0.1	56.02 0.01	52.8 2.9
May 10.5	37.76 0.26	34.8 3.3	16.50 0.01	68.4 1.7	44.08 0.06	59.8 2.6	54.31 0.01	37.7 0.1	56.01 0.06	55.7 2.8
20.4	37.50 0.53	38.1 3.0	16.49 0.03	70.1 1.6	44.02 0.09	62.4 2.5	54.32 0.00	37.6 0.2	55.95 0.11	58.5 2.6
30.4	36.97 0.78	41.1 2.7	16.46 0.06	71.7 1.6	43.93 0.13	64.9 2.2	54.32 0.04	37.4 0.2	55.84 0.15	61.1 2.3
June 9.4	36.19 1.02	43.8 2.4	16.40 0.08	73.3 1.4	43.80 0.15	67.1 2.0	54.28 0.05	37.2 0.4	55.69 0.18	63.4 2.1
19.4	35.17 1.22	46.2 1.9	16.32 0.11	74.7 1.2	43.65 0.19	69.1 1.5	54.23 0.08	36.8 0.4	55.51 0.22	65.5 1.6
29.3	33.95 1.40	48.1 1.5	16.21 0.12	75.9 0.9	43.46 0.21	70.6 1.2	54.15 0.10	36.4 0.5	55.29 0.25	67.1 1.2
July 9.3	32.55 1.53	49.6 0.9	16.09 0.13	76.8 0.8	43.25 0.23	71.8 0.7	54.05 0.12	35.9 0.5	55.04 0.27	68.3 0.8
19.3	31.02 1.62	50.5 0.4	15.96 0.15	77.6 0.5	43.02 0.23	72.5 0.2	53.93 0.13	35.4 0.6	54.77 0.28	69.1 0.2
29.3	29.40 1.66	50.9 0.2	15.81 0.16	78.1 0.2	42.79 0.25	72.7 0.2	53.80 0.14	34.8 0.6	54.49 0.29	69.3 0.2
Aug. 8.2	27.74 1.63	50.7 0.7	15.65 0.15	78.3 0.1	42.54 0.24	72.5 0.6	53.66 0.14	34.2 0.6	54.20 0.28	69.1 0.7
18.2	26.11 1.56	50.0 1.3	15.50 0.15	78.2 0.3	42.30 0.23	71.9 1.1	53.52 0.14	33.6 0.7	53.92 0.28	68.4 1.2
28.2	24.55 1.41	48.7 1.7	15.35 0.14	77.9 0.7	42.07 0.22	70.8 1.5	53.38 0.13	32.9 0.5	53.64 0.26	67.2 1.6
Sept. 7.1	23.14 1.21	47.0 2.3	15.21 0.13	77.2 0.9	41.85 0.19	69.3 2.0	53.25 0.11	32.4 0.6	53.38 0.23	65.6 2.0
17.1	21.93 0.96	44.7 2.6	15.08 0.09	76.3 1.3	41.66 0.15	67.3 2.2	53.14 0.09	31.8 0.4	53.15 0.20	63.6 2.5
27.1	20.97 0.66	42.1 2.9	14.99 0.07	75.0 1.5	41.51 0.11	65.1 2.7	53.05 0.05	31.4 0.3	52.95 0.15	61.1 2.6
Oct. 7.1	20.31 0.33	39.2 3.0	14.92 0.02	73.5 1.8	41.40 0.07	62.4 3.0	53.00 0.01	31.1 0.1	52.80 0.10	58.3 3.1
17.0	19.98 0.02	36.2 3.1	14.90 0.02	71.7 2.1	41.33 0.01	59.4 3.2	52.99 0.03	31.0 0.1	52.70 0.03	55.2 3.3
27.0	20.00 0.40	33.1 3.1	14.92 0.07	69.6 2.3	41.32 0.06	56.2 3.3	53.02 0.09	31.1 0.4	52.67 0.03	51.9 3.5
Nov. 6.0	20.40 0.75	30.0 2.8	14.99 0.12	67.3 2.5	41.38 0.12	52.9 3.5	53.11 0.13	31.5 0.6	52.70 0.11	48.4 3.7
16.0	21.15 1.09	27.2 2.6	15.11 0.16	64.8 2.7	41.50 0.18	49.4 3.5	53.24 0.18	32.1 0.9	52.81 0.17	44.7 3.6
25.9	22.24 1.40	24.6 2.2	15.27 0.22	62.1 2.7	41.68 0.24	45.9 3.3	53.42 0.23	32.3 1.1	52.98 0.24	41.1 3.5
Dec. 5.9	23.64 1.65	22.4 1.6	15.49 0.25	59.4 2.6	41.92 0.29	42.6 3.2	53.65 0.27	34.1 1.3	53.22 0.31	37.6 3.3
15.9	25.29 1.86	20.8 1.2	15.74 0.29	56.8 2.6	42.21 0.34	39.4 3.0	53.92 0.29	35.4 1.5	53.53 0.35	34.3 3.0
25.8	27.15 2.00	19.6 0.6	16.03 0.31	54.2 2.4	42.55 0.38	36.4 2.5	54.21 0.31	36.9 1.7	53.88 0.40	31.3 2.6
35.8	29.15	19.0	16.34	51.8	42.93	33.9	54.52	38.6	54.28	28.7

FIXED STARS, 1903.

(CONSTANTS OF STRUVE AND PETERS.)

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APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	ρ Bootis.		5 Ursæ Minoris.		α^3 Centauri.		33 Bootis.		α Apodis.	
	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion South.
	h m 14 27	° +30 47	h m 14 27	° +76 07	h m 14 33	° -60 25	h m 14 35	° +44 48	h m 14 35	° -78 37
	s	"	s	"	s	"	s	"	s	"
Jan. 0.8	38.32	42.2	38.69	23.7	0.46	48.5	12.57	72.8	47.07	38.8
10.8	38.65	39.9	39.57	21.7	1.01	48.6	12.94	70.4	48.34	38.3
20.8	38.99	37.9	40.51	20.2	1.57	49.2	13.32	68.4	49.64	38.5
30.8	39.33	36.4	41.49	19.4	2.13	50.3	13.71	67.0	50.96	39.2
Feb. 9.7	39.66	35.4	42.47	19.4	2.67	51.8	14.10	66.2	52.24	40.4
19.7	39.98	34.9	43.40	19.9	3.19	53.6	14.46	66.0	53.48	42.1
Mar. 1.7	40.26	34.9	44.27	21.2	3.66	55.7	14.80	66.4	54.63	44.2
11.6	40.52	35.5	45.04	23.0	4.09	58.1	15.10	67.4	55.68	46.7
21.6	40.74	36.5	45.68	25.3	4.47	60.6	15.36	68.9	56.61	49.5
31.6	40.92	37.9	46.18	28.0	4.79	63.3	15.58	70.8	57.41	52.5
Apr. 10.6	41.07	39.7	46.53	31.0	5.06	66.1	15.75	73.1	58.05	55.7
20.5	41.17	41.7	46.72	34.2	5.27	68.8	15.87	75.6	58.54	59.0
30.5	41.24	43.9	46.74	37.4	5.41	71.6	15.94	78.4	58.87	62.4
May 10.5	41.27	46.1	46.61	40.6	5.50	74.2	15.96	81.1	59.04	65.7
20.5	41.27	48.4	46.33	43.6	5.52	76.6	15.95	83.8	59.04	68.8
30.4	41.24	50.6	45.92	46.3	5.48	78.9	15.89	86.4	58.87	71.8
June 9.4	41.17	52.6	45.39	48.7	5.38	80.9	15.78	88.8	58.55	74.6
19.4	41.08	54.4	44.75	50.7	5.23	82.7	15.65	90.9	58.07	77.0
29.3	40.96	55.9	44.03	52.2	5.02	84.1	15.49	92.6	57.46	79.0
July 9.3	40.82	57.2	43.25	53.2	4.76	85.1	15.30	94.0	56.72	80.6
19.3	40.67	58.1	42.42	53.7	4.46	85.7	15.08	95.0	55.89	81.8
29.3	40.50	58.7	41.56	53.7	4.13	85.9	14.85	95.5	54.98	82.4
Aug. 8.2	40.32	58.9	40.69	53.1	3.78	85.6	14.62	95.6	54.02	82.5
18.2	40.13	58.7	39.84	52.0	3.42	84.9	14.37	95.2	53.05	82.0
28.2	39.95	58.2	39.02	50.4	3.06	83.8	14.13	94.4	52.11	81.0
Sept. 7.2	39.78	57.3	38.25	48.3	2.73	82.3	13.90	93.1	51.23	79.5
17.1	39.63	56.0	37.56	45.8	2.44	80.4	13.70	91.4	50.44	77.5
27.1	39.50	54.4	36.96	42.9	2.20	78.3	13.52	89.3	49.80	75.1
Oct. 7.1	39.41	52.5	36.47	39.7	2.02	76.0	13.38	86.9	49.32	72.4
17.0	39.35	50.2	36.10	36.2	1.92	73.6	13.30	84.1	49.03	69.5
27.0	39.35	47.7	35.88	32.5	1.92	71.1	13.26	81.0	48.95	66.6
Nov. 6.0	39.39	45.0	35.82	28.8	2.00	68.7	13.28	77.7	49.10	63.6
16.0	39.49	42.0	35.91	24.9	2.18	66.6	13.36	74.3	49.47	60.7
25.9	39.65	39.0	36.18	21.2	2.45	64.7	13.51	70.8	50.05	58.1
Dec. 5.9	39.85	36.0	36.60	17.6	2.81	63.2	13.72	67.4	50.84	55.9
15.9	40.10	33.0	37.18	14.4	3.23	62.1	13.98	64.1	51.80	54.0
25.9	40.39	30.2	37.89	11.5	3.72	61.4	14.30	61.1	52.90	52.7
35.8	40.70	27.6	38.72	9.1	4.24	61.3	14.65	58.4	54.10	52.0

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	ϵ Bootis.		α^2 Libræ.		β Ursæ Minoris.		β Bootis.		γ Scorpii.	
	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion South.
	h m 14 40	° ' +27 28	h m 14 45	° ' -15 38	h m 14 50	° ' +74 32	h m 14 58	° ' +40 46	h m 14 58	° ' -24 53
	s	"	s	"	s	"	s	"	s	"
Jan. 0.8	44.37	53.1	30.45	12.5	54.51	54.4	16.43	15.3	23.27	52.8
10.8	44.60	50.7	30.77	14.0	55.27	52.1	16.77	12.7	23.60	53.9
20.8	45.02	48.7	31.09	15.6	56.10	50.3	17.12	10.5	23.94	55.2
30.8	45.35	47.0	31.42	17.2	56.97	49.2	17.49	8.9	24.28	56.6
Feb. 9.7	45.68	45.9	31.74	18.7	57.85	48.8	17.86	7.8	24.62	58.0
19.7	45.99	45.2	32.04	20.2	58.72	49.0	18.21	7.3	24.94	59.5
Mar. 1.7	46.28	45.1	32.32	21.6	59.54	49.9	18.55	7.4	25.24	61.0
11.7	46.54	45.5	32.57	22.7	60.28	51.4	18.85	8.1	25.52	62.4
21.6	46.76	46.3	32.80	23.8	60.92	53.5	19.12	9.3	25.76	63.7
31.6	46.96	47.5	32.99	24.6	61.45	56.0	19.35	11.0	25.99	64.9
Apr. 10.6	47.11	49.1	33.16	25.2	61.84	58.9	19.54	13.0	26.18	66.0
20.5	47.23	51.0	33.30	25.7	62.10	62.0	19.68	15.4	26.34	67.0
30.5	47.31	53.0	33.41	26.0	62.20	65.2	19.78	18.0	26.47	67.8
May 10.5	47.36	55.2	33.49	26.2	62.17	68.4	19.84	20.7	26.57	68.5
20.5	47.38	57.4	33.54	26.3	62.01	71.6	19.86	23.4	26.64	69.1
30.4	47.36	59.4	33.56	26.3	61.71	74.5	19.83	26.0	26.67	69.6
June 9.4	47.31	61.4	33.55	26.1	61.30	77.1	19.77	28.4	26.67	69.9
19.4	47.24	63.3	33.51	25.9	60.79	79.4	19.67	30.7	26.65	70.2
29.4	47.14	64.8	33.45	25.6	60.18	81.2	19.54	32.6	26.59	70.3
July 9.3	47.01	66.2	33.36	25.3	59.51	82.6	19.38	34.2	26.50	70.2
19.3	46.87	67.2	33.26	24.8	58.78	83.4	19.19	35.4	26.39	70.1
29.3	46.70	67.9	33.13	24.4	58.01	83.7	18.99	36.2	26.25	69.8
Aug. 8.2	46.53	68.2	32.98	23.8	57.22	83.5	18.76	36.6	26.10	69.4
18.2	46.35	68.2	32.83	23.3	56.43	82.8	18.53	36.5	25.93	68.8
28.2	46.17	67.9	32.68	22.7	55.66	81.5	18.30	36.0	25.76	68.2
Sept. 7.2	46.00	67.2	32.52	22.1	54.92	79.8	18.08	35.0	25.60	67.4
17.1	45.85	66.1	32.39	21.5	54.24	77.6	17.87	33.7	25.44	66.6
27.1	45.71	64.7	32.28	21.1	53.63	75.0	17.68	31.9	25.31	65.8
Oct. 7.1	45.61	63.0	32.20	20.7	53.11	71.9	17.53	29.7	25.22	65.0
17.1	45.55	60.9	32.16	20.4	52.71	68.6	17.42	27.2	25.16	64.2
27.0	45.53	58.6	32.16	20.3	52.42	65.1	17.36	24.4	25.15	63.6
Nov. 6.0	45.56	56.0	32.21	20.4	52.28	61.3	17.36	21.3	25.20	63.2
16.0	45.65	53.2	32.32	20.8	52.28	57.5	17.41	18.0	25.29	62.9
25.9	45.79	50.3	32.47	21.4	52.44	53.7	17.53	14.7	25.45	62.9
Dec. 5.9	45.98	47.4	32.68	22.2	52.75	50.1	17.70	11.3	25.65	63.2
15.9	46.21	44.5	32.92	23.3	53.20	46.6	17.93	8.0	25.90	63.7
25.9	46.48	41.7	33.20	24.6	53.78	43.5	18.21	4.9	26.19	64.4
35.8	46.79	39.1	33.50	26.0	54.48	40.9	18.53	2.0	26.50	65.4

FIXED STARS, 1903.

371

(CONSTANTS OF STRUVE AND PETERS.)

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	δ Bootis.		β Libræ.		ρ Octantis.		μ^1 Bootis.		γ^2 Ursæ Minoris.	
	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.
	h m 15 11	° ' " +33 40	h m 15 11	° ' " - 9 01	h m 15 20	° ' " -84 08	h m 15 20	° ' " +37 42	h m 15 20	° ' " +72 10
Jan. 0.9	34.57	30.2	46.80	24.6	47.73	12.9	48.44	56.5	48.58	35.2
10.8	34.88	27.6	47.09	26.2	49.95	11.6	48.75	53.8	49.19	32.5
20.8	35.21	25.4	47.40	27.8	52.33	10.9	49.09	51.5	49.88	30.3
30.8	35.55	23.6	47.72	29.4	54.80	10.8	49.44	49.6	50.62	28.8
Feb. 9.8	35.89	22.3	48.03	30.8	57.31	11.2	49.79	48.3	51.39	27.9
19.7	36.22	21.6	48.33	32.1	59.79	12.1	50.14	47.6	52.16	27.7
Mar. 1.7	36.54	21.4	48.61	33.2	62.19	13.6	50.47	47.4	52.91	28.2
11.7	36.83	21.8	48.88	34.1	64.45	15.4	50.77	47.9	53.61	29.3
21.6	37.09	22.7	49.11	34.8	66.53	17.7	51.05	48.8	54.23	31.1
31.6	37.32	24.0	49.33	35.2	68.39	20.3	51.30	50.3	54.76	33.3
Apr. 10.6	37.51	25.8	49.51	35.4	70.00	23.2	51.50	52.2	55.20	36.0
20.6	37.66	27.9	49.67	35.4	71.33	26.2	51.67	54.4	55.51	39.0
30.5	37.78	30.2	49.80	35.3	72.36	29.5	51.80	56.9	55.70	42.1
May 10.5	37.86	32.6	49.90	35.1	73.07	32.8	51.88	59.5	55.77	45.4
20.5	37.90	35.1	49.97	34.7	73.44	36.1	51.93	62.2	55.72	48.6
30.5	37.90	37.6	50.02	34.2	73.48	39.3	51.93	64.8	55.56	51.7
June 9.4	37.87	40.0	50.03	33.7	73.18	42.4	51.90	67.3	55.29	54.6
19.4	37.80	42.1	50.01	33.2	72.54	45.2	51.83	69.6	54.92	57.2
29.4	37.71	44.0	49.97	32.6	71.60	47.8	51.73	71.7	54.45	59.4
July 9.3	37.58	45.6	49.90	32.1	70.36	50.0	51.59	73.5	53.92	61.1
19.3	37.42	47.0	49.80	31.5	68.88	51.7	51.43	74.9	53.32	62.4
29.3	37.25	47.9	49.68	31.0	67.19	53.0	51.24	75.9	52.67	63.2
Aug. 8.3	37.06	48.4	49.54	30.5	65.35	53.8	51.03	76.5	51.98	63.5
18.2	36.85	48.6	49.39	30.0	63.42	54.0	50.80	76.7	51.29	63.2
28.2	36.64	48.3	49.23	29.6	61.46	53.6	50.58	76.5	50.59	62.4
Sept. 7.2	36.44	47.7	49.07	29.2	59.56	52.7	50.35	75.9	49.90	61.1
17.2	36.24	46.6	48.93	28.9	57.79	51.2	50.14	74.8	49.26	59.3
27.1	36.07	45.2	48.80	28.7	56.22	49.2	49.94	73.3	48.66	57.1
Oct. 7.1	35.92	43.4	48.70	28.7	54.91	46.8	49.78	71.4	48.14	54.4
17.1	35.82	41.2	48.63	28.8	53.94	44.1	49.65	69.1	47.70	51.4
27.0	35.76	38.7	48.61	29.1	53.34	41.1	49.57	66.5	47.37	48.0
Nov. 6.0	35.75	36.0	48.63	29.6	53.15	38.0	49.54	63.7	47.15	44.5
16.0	35.79	33.0	48.71	30.3	53.39	34.9	49.57	60.6	47.06	40.7
26.0	35.89	29.9	48.83	31.2	54.06	31.9	49.66	57.4	47.11	36.9
Dec. 5.9	36.05	26.7	49.00	32.3	55.14	29.2	49.80	54.1	47.29	33.2
15.9	36.26	23.5	49.22	33.6	56.60	26.7	50.00	50.8	47.61	29.6
25.9	36.51	20.5	49.48	35.1	58.39	24.7	50.25	47.6	48.05	26.2
35.9	36.80	17.7	49.76	36.7	60.45	23.1	50.54	44.7	48.60	23.2

FIXED STARS, 1903.

(CONSTANTS OF STRUVE AND PETERS)

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	β Coronæ Borealis.		α Coronæ Borealis.		α Serpentis.		ϵ Serpentis.		ζ Ursæ Minoris.	
	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.
	h m 15 23	° ' " +29 26	h m 15 30	° ' " +27 02	h m 15 39	° ' " + 6 43	h m 15 45	° ' " + 4 46	h m 15 47	° ' " +78 05
Jan. 0.9	48.87	20.2	33.94	24.9	28.74	52.9	58.16	14.0	23.91	27.5
10.9	49.16	17.6	34.23	22.3	29.01	50.9	58.43	12.1	24.68	24.7
20.8	49.48	15.3	34.54	20.0	29.30	48.9	58.72	10.2	25.58	22.4
30.8	49.80	13.5	34.86	18.1	29.61	47.2	59.02	8.5	26.59	20.6
Feb. 9.8	50.13	12.1	35.18	16.6	29.91	45.8	59.32	7.0	27.67	19.5
19.7	50.46	11.2	35.50	15.7	30.21	44.6	59.62	5.9	28.78	19.0
Mar. 1.7	50.76	10.8	35.80	15.2	30.50	43.8	59.91	5.1	29.88	19.2
11.7	51.05	11.0	36.09	15.3	30.77	43.4	60.18	4.6	30.92	20.1
21.7	51.31	11.7	36.35	15.9	31.02	43.3	60.43	4.4	31.89	21.6
31.6	51.54	12.9	36.58	16.9	31.24	43.5	60.67	4.6	32.73	23.6
Apr. 10.6	51.74	14.5	36.79	18.4	31.44	44.1	60.87	5.1	33.44	26.1
20.6	51.90	16.4	36.96	20.2	31.62	45.0	61.05	5.9	33.98	28.9
30.6	52.03	18.5	37.09	22.2	31.77	46.0	61.21	6.9	34.35	32.0
May 10.5	52.12	20.8	37.19	24.4	31.88	47.3	61.33	8.0	34.53	35.3
20.5	52.18	23.2	37.26	26.7	31.97	48.6	61.43	9.2	34.53	38.5
30.5	52.20	25.6	37.29	29.0	32.03	50.0	61.50	10.5	34.35	41.7
June 9.4	52.19	27.8	37.29	31.2	32.06	51.4	61.53	11.8	34.00	44.7
19.4	52.14	30.0	37.25	33.3	32.06	52.7	61.53	13.1	33.49	47.4
29.4	52.07	31.9	37.19	35.2	32.02	54.0	61.51	14.3	32.83	49.9
July 9.4	51.96	33.5	37.09	36.9	31.96	55.1	61.45	15.4	32.04	51.9
19.3	51.82	34.9	36.96	38.2	31.87	56.1	61.36	16.4	31.15	53.4
29.3	51.66	35.9	36.81	39.3	31.75	57.0	61.25	17.2	30.17	54.5
Aug. 8.3	51.48	36.6	36.64	40.0	31.61	57.7	61.11	17.9	29.12	55.0
18.3	51.28	36.9	36.45	40.4	31.46	58.2	60.96	18.4	28.04	55.1
28.2	51.08	36.8	36.25	40.4	31.29	58.5	60.80	18.8	26.94	54.6
Sept. 7.2	50.88	36.4	36.06	40.1	31.13	58.6	60.63	18.9	25.85	53.6
17.2	50.69	35.6	35.87	39.4	30.96	58.4	60.46	18.8	24.80	52.2
27.1	50.52	34.4	35.70	38.3	30.82	58.0	60.31	18.5	23.81	50.2
Oct. 7.1	50.38	32.8	35.55	36.8	30.69	57.4	60.18	18.0	22.91	47.8
17.1	50.27	30.9	35.44	35.0	30.60	56.6	60.09	17.3	22.12	45.0
27.1	50.20	28.6	35.37	32.9	30.54	55.5	60.03	16.3	21.48	41.9
Nov. 6.0	50.18	26.1	35.35	30.5	30.53	54.1	60.01	15.1	21.00	38.5
16.0	50.21	23.3	35.38	27.9	30.57	52.6	60.04	13.6	20.69	34.9
26.0	50.30	20.4	35.46	25.1	30.65	50.8	60.13	12.0	20.58	31.1
Dec. 6.0	50.44	17.4	35.60	22.1	30.79	48.8	60.26	10.1	20.67	27.4
15.9	50.64	14.3	35.78	19.1	30.97	46.7	60.44	8.2	20.96	23.8
25.9	50.87	11.4	36.01	16.2	31.20	44.6	60.65	6.2	21.45	20.4
35.9	51.15	8.6	36.28	13.5	31.45	42.5	60.90	4.1	22.11	17.3

FIXED STARS, 1903.

373

(CONSTANTS OF STRUVE AND PETERS.)

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Coronæ Borealis.		δ Scorpïi.		β Scorpïi.		φ Herculis.		θ Apodis.	
	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion South.
	h m 15 53	° ' " +27 09	h m 15 54	° ' " -22 20	h m 15 59	° ' " -19 32	h m 16 05	° ' " +45 11	h m 16 05	° ' " -78 26
Jan. 0.9	33.28	29.7	35.24	34.9	47.15	14.9	41.25	17.5	47.27	47.9
10.9	33.54	27.0	35.54	35.8	47.43	15.9	41.53	14.5	48.33	46.3
20.8	33.84	24.6	35.85	36.7	47.73	16.9	41.86	11.8	49.51	45.0
30.8	34.15	22.6	36.18	37.8	48.05	18.0	42.21	9.6	50.77	44.3
Feb. 9.8	34.47	21.1	36.51	38.9	48.38	19.1	42.58	8.0	52.08	44.1
19.8	34.78	20.0	36.83	39.9	48.70	20.1	42.96	6.9	53.40	44.4
Mar. 1.7	35.09	19.4	37.15	41.0	49.01	21.1	43.33	6.5	54.72	45.2
11.7	35.39	19.4	37.45	42.0	49.30	22.0	43.69	6.7	55.99	46.4
21.7	35.66	19.8	37.73	42.8	49.58	22.8	44.02	7.5	57.20	48.0
31.6	35.91	20.8	37.99	43.6	49.84	23.5	44.32	8.9	58.33	50.0
Apr. 10.6	36.13	22.2	38.23	44.3	50.08	24.0	44.59	10.8	59.34	52.3
20.6	36.32	23.9	38.44	44.9	50.29	24.4	44.82	13.0	60.24	54.9
30.6	36.48	26.0	38.62	45.4	50.47	24.7	45.01	15.7	61.00	57.6
May 10.5	36.61	28.2	38.78	45.7	50.63	24.9	45.15	18.5	61.60	60.5
20.5	36.70	30.5	38.90	46.1	50.76	25.0	45.25	21.5	62.05	63.5
30.5	36.75	32.9	38.99	46.3	50.85	25.1	45.30	24.5	62.32	66.5
June 9.5	36.77	35.2	39.05	46.5	50.92	25.1	45.30	27.4	62.42	69.5
19.4	36.75	37.4	39.08	46.6	50.94	25.1	45.25	30.2	62.34	72.3
29.4	36.70	39.5	39.06	46.7	50.94	25.0	45.16	32.7	62.09	75.0
July 9.4	36.62	41.3	39.02	46.7	50.89	24.9	45.02	35.0	61.67	77.4
19.3	36.50	42.8	38.94	46.6	50.82	24.7	44.85	36.8	61.09	79.4
29.3	36.35	44.1	38.82	46.5	50.71	24.5	44.64	38.3	60.38	81.0
Aug. 8.3	36.18	45.0	38.68	46.3	50.58	24.2	44.40	39.4	59.55	82.2
18.3	36.00	45.6	38.52	46.0	50.42	23.9	44.14	40.0	58.63	82.9
28.2	35.80	45.8	38.35	45.6	50.25	23.6	43.86	40.2	57.66	83.1
Sept. 7.2	35.59	45.6	38.17	45.1	50.07	23.2	43.58	39.9	56.68	82.7
17.2	35.39	45.0	37.99	44.6	49.90	22.7	43.30	39.1	55.72	81.8
27.2	35.20	44.1	37.83	44.1	49.74	22.3	43.04	37.8	54.83	80.4
Oct. 7.1	35.04	42.8	37.69	43.6	49.60	21.9	42.80	36.1	54.04	78.5
17.1	34.91	41.1	37.59	43.0	49.49	21.5	42.60	34.0	53.40	76.2
27.1	34.82	39.1	37.53	42.6	49.42	21.2	42.44	31.4	52.93	73.6
Nov. 6.0	34.77	36.8	37.51	42.3	49.40	21.0	42.34	28.6	52.66	70.8
16.0	34.77	34.2	37.55	42.1	49.43	21.0	42.29	25.4	52.60	67.8
26.0	34.83	31.4	37.64	42.1	49.52	21.2	42.31	22.1	52.77	64.9
Dec. 6.0	34.94	28.6	37.79	42.2	49.66	21.5	42.39	18.6	53.17	62.0
15.9	35.10	25.6	37.98	42.6	49.84	22.0	42.53	15.1	53.77	59.4
25.9	35.31	22.6	38.22	43.2	50.07	22.7	42.74	11.7	54.57	57.1
35.9	35.55	19.8	38.49	44.0	50.34	23.6	43.00	8.4	55.54	55.2

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	Groombridge 2320.		δ Ophiuchi.		σ Coronæ Borealis.		τ Herculis.		γ Apodis.	
	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion South.
	h m 16 05	° ' " +68 03	h m 16 09	° ' " - 3 26	h m 16 11	° ' " +34 06	h m 16 16	° ' " +46 32	h m 16 18	° ' " -78 40
	s	"	s	"	s	"	s	"	s	"
Jan. 0.9	59.78	50.8	15.04	35.0	1.55	14.5	47.86	36.6	30.25	29.0
10.9	60.21	47.7	15.29	36.6	1.81	11.6	48.14	33.5	31.30	27.2
20.9	60.72	45.1	15.57	38.2	2.10	9.1	48.46	30.7	32.47	25.8
30.8	61.29	43.0	15.87	39.7	2.41	6.9	48.81	28.4	33.73	24.9
Feb. 9.8	61.91	41.5	16.17	41.0	2.74	5.2	49.18	26.7	35.05	24.5
19.8	62.55	40.6	16.47	42.1	3.07	4.0	49.56	25.5	36.40	24.6
Mar. 1.7	63.19	40.4	16.76	43.0	3.40	3.4	49.94	25.0	37.75	25.1
11.7	63.80	41.0	17.04	43.6	3.72	3.4	50.31	25.1	39.07	26.1
21.7	64.38	42.1	17.31	44.0	4.01	4.0	50.65	25.8	40.33	27.6
31.7	64.90	43.9	17.55	44.1	4.29	5.0	50.97	27.2	41.51	29.4
Apr. 10.6	65.35	46.2	17.78	43.9	4.53	6.6	51.26	29.0	42.59	31.5
20.6	65.72	48.8	17.98	43.5	4.74	8.5	51.50	31.3	43.55	33.9
30.6	66.00	51.8	18.16	42.9	4.92	10.8	51.71	33.9	44.37	36.6
May 10.5	66.18	55.0	18.31	42.2	5.06	13.3	51.86	36.8	45.05	39.4
20.5	66.26	58.3	18.43	41.4	5.17	15.9	51.97	39.8	45.56	42.3
30.5	66.25	61.6	18.53	40.4	5.24	18.6	52.03	42.8	45.90	45.3
June 9.5	66.15	64.8	18.59	39.5	5.26	21.2	52.04	45.8	46.06	48.3
19.4	65.95	67.8	18.62	38.6	5.25	23.8	52.00	48.7	46.04	51.1
29.4	65.67	70.4	18.61	37.7	5.20	26.1	51.92	51.3	45.84	53.8
July 9.4	65.31	72.7	18.58	36.9	5.11	28.2	51.79	53.7	45.45	56.3
19.4	64.88	74.6	18.51	36.1	4.98	30.0	51.61	55.7	44.91	58.5
29.3	64.39	76.1	18.41	35.4	4.82	31.4	51.40	57.3	44.21	60.2
Aug. 8.3	63.86	77.1	18.28	34.9	4.63	32.5	51.16	58.5	43.39	61.6
18.3	63.30	77.5	18.13	34.4	4.42	33.2	50.89	59.2	42.47	62.4
28.3	62.71	77.4	17.97	34.0	4.20	33.5	50.61	59.5	41.49	62.8
Sept. 7.2	62.12	76.8	17.80	33.8	3.97	33.4	50.31	59.3	40.49	62.6
17.2	61.54	75.7	17.63	33.7	3.74	32.8	50.02	58.6	39.49	61.8
27.2	60.99	74.1	17.47	33.7	3.53	31.9	49.74	57.5	38.55	60.5
Oct. 7.1	60.49	72.0	17.33	33.8	3.33	30.5	49.49	55.9	37.71	58.8
17.1	60.05	69.5	17.22	34.2	3.16	28.7	49.27	53.8	37.01	56.6
27.1	59.68	66.6	17.14	34.7	3.04	26.6	49.09	51.3	36.47	54.1
Nov. 6.1	59.40	63.3	17.11	35.4	2.96	24.1	48.96	48.5	36.14	51.3
16.0	59.22	59.8	17.13	36.4	2.93	21.3	48.90	45.4	36.02	48.4
26.0	59.15	56.2	17.19	37.5	2.96	18.3	48.90	42.0	36.13	45.5
Dec. 6.0	59.20	52.4	17.31	38.8	3.04	15.2	48.96	38.5	36.47	42.6
15.9	59.36	48.7	17.46	40.2	3.18	12.0	49.09	35.0	37.03	39.9
25.9	59.63	45.1	17.67	41.8	3.37	8.8	49.28	31.5	37.79	37.5
35.9	60.01	41.7	17.91	43.4	3.61	5.8	49.53	28.2	38.73	35.4

FIXED STARS, 1903.

(CONSTANTS OF STRUVE AND PETERS.)

375

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	η Ursæ Minoris.		η Draconis.		α Scorpii. (Antares.)		β Herculis.		Λ Draconis.	
	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.
	h m 16 20	° ' " +75 58	h m 16 22	° ' " +61 43	h m 16 23	° ' " -26 12	h m 16 26	° ' " +21 41	h m 16 28	° ' " +68 58
Jan. 0.9	13.97	40.2	37.84	57.8	26.85	50.1	1.97	64.3	6.31	37.6
10.9	14.53	37.1	38.18	54.6	27.13	50.6	2.21	61.8	6.72	34.4
20.9	15.22	34.4	38.58	51.8	27.44	51.2	2.48	59.4	7.20	31.5
30.8	16.02	32.3	39.04	49.5	27.76	51.9	2.77	57.3	7.76	29.2
Feb. 9.8	16.91	30.7	39.53	47.7	28.09	52.7	3.07	55.6	8.38	27.4
19.8	17.84	29.8	40.04	46.6	28.43	53.5	3.37	54.4	9.03	26.3
Mar. 1.8	18.79	29.5	40.56	46.2	28.76	54.3	3.67	53.6	9.69	25.9
11.7	19.72	29.9	41.06	46.4	29.08	55.1	3.97	53.3	10.34	26.1
21.7	20.60	31.0	41.54	47.3	29.38	55.9	4.25	53.5	10.96	27.0
31.7	21.40	32.6	41.98	48.8	29.66	56.6	4.51	54.2	11.53	28.6
Apr. 10.6	22.10	34.8	42.37	50.9	29.93	57.3	4.75	55.3	12.03	30.6
20.6	22.67	37.5	42.70	53.4	30.17	57.9	4.96	56.8	12.46	33.2
30.6	23.11	40.4	42.97	56.2	30.39	58.4	5.15	58.6	12.80	36.0
May 10.6	23.40	43.6	43.17	59.3	30.58	58.9	5.30	60.6	13.04	39.2
20.5	23.54	46.9	43.29	62.6	30.74	59.3	5.43	62.7	13.18	42.5
30.5	23.52	50.2	43.33	65.9	30.86	59.7	5.52	65.0	13.22	45.8
June 9.5	23.34	53.4	43.30	69.1	30.95	60.1	5.58	67.2	13.16	49.1
19.5	23.02	56.4	43.20	72.2	31.00	60.4	5.60	69.3	13.00	52.2
29.4	22.57	59.1	43.03	75.0	31.02	60.7	5.58	71.4	12.74	55.0
July 9.4	21.99	61.6	42.79	77.5	30.99	60.9	5.53	73.2	12.40	57.6
19.4	21.31	63.6	42.49	79.6	30.93	61.0	5.44	74.8	11.98	59.7
29.3	20.53	65.1	42.14	81.4	30.83	61.1	5.33	76.2	11.50	61.5
Aug. 8.3	19.68	66.2	41.75	82.6	30.70	61.0	5.18	77.3	10.95	62.7
18.3	18.77	66.8	41.32	83.3	30.54	61.0	5.01	78.1	10.37	63.5
28.3	17.82	66.8	40.87	83.6	30.36	60.8	4.82	78.5	9.75	63.7
Sept. 7.2	16.87	66.4	40.42	83.3	30.17	60.5	4.62	78.6	9.13	63.5
17.2	15.93	65.4	39.96	82.5	29.98	60.0	4.42	78.4	8.50	62.7
27.2	15.03	63.9	39.52	81.2	29.80	59.5	4.23	77.8	7.90	61.4
Oct. 7.2	14.18	62.0	39.11	79.4	29.64	59.0	4.06	76.9	7.34	59.6
17.1	13.42	59.6	38.75	77.1	29.51	58.4	3.91	75.6	6.83	57.3
27.1	12.77	56.8	38.45	74.4	29.42	57.8	3.80	74.0	6.39	54.6
Nov. 6.1	12.24	53.7	38.22	71.4	29.37	57.3	3.73	72.1	6.04	51.5
16.0	11.86	50.3	38.06	68.0	29.38	56.9	3.70	70.0	5.80	48.2
26.0	11.64	46.7	38.00	64.4	29.44	56.6	3.73	67.5	5.66	44.6
Dec. 6.0	11.60	43.0	38.02	60.7	29.56	56.4	3.81	64.9	5.64	40.8
16.0	11.72	39.3	38.14	57.0	29.73	56.4	3.94	62.2	5.74	37.1
25.9	12.02	35.7	38.35	53.3	29.95	56.6	4.11	59.5	5.96	33.5
35.9	12.49	32.4	38.64	49.9	30.21	57.0	4.33	56.8	6.30	30.0

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	ζ Ophiuchi.		α Triang. Australis.		γ Herculis.		κ Ophiuchi.		ε Ursæ Minoris.	
	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.
	h m 16 31	° ' " -10 22	h m 16 38	° ' " -68 50	h m 16 39	° ' " +39 06	h m 16 53	° ' " +9 31	h m 16 55	° ' " +82 11
Jan. 0.9	48.30 s	7.1 "	21.42 s	43.2 "	32.79 s	23.6 "	3.70 s	37.1 "	42.18 s	50.4 "
10.9	48.55 .25	8.3 1.2	21.99 .57	41.5 1.7	33.03 .24	20.5 3.1	3.92 .22	35.0 2.1	42.86 0.68	47.2 3.2
20.9	48.82 .27	9.5 1.2	22.64 .65	40.2 1.3	33.30 .27	17.7 2.8	4.16 .24	33.0 2.0	43.83 0.97	44.3 2.9
30.8	49.11 .29	10.7 1.2	23.34 .70	39.3 0.9	33.61 .31	15.3 2.4	4.43 .27	31.2 1.8	45.03 1.20	41.8 2.5
Feb. 9.8	49.41 .30	11.8 1.1	24.08 .74	38.8 0.5	33.94 .33	13.4 1.9	4.71 .28	29.7 1.5	46.42 1.39	39.9 1.9
	49.41 .30	11.8 1.0	24.08 .76	38.8 0.1	33.94 .34	13.4 1.4	4.71 .29	29.7 1.2	46.42 1.54	39.9 1.4
19.8	49.71 .30	12.8 0.8	24.84 .76	38.7 0.3	34.28 .35	12.0 0.8	5.00 .29	28.5 0.9	47.96 1.62	38.5 0.6
Mar. 1.8	50.01 .30	13.6 0.6	25.60 .75	39.0 0.7	34.63 .33	11.2 0.1	5.29 .29	27.6 0.4	49.58 1.63	37.9 0.1
11.7	50.31 .28	14.2 0.5	26.35 .73	39.7 1.1	34.96 .33	11.1 0.4	5.58 .28	27.2 0.1	51.21 1.60	37.8 0.6
21.7	50.59 .26	14.7 0.2	27.08 .69	40.8 1.4	35.29 .30	11.5 1.0	5.86 .26	27.1 0.3	52.81 1.50	38.4 1.3
31.7	50.85 .25	14.9 0.0	27.77 .64	42.2 1.8	35.59 .28	12.5 1.5	6.12 .23	27.4 0.7	54.31 1.36	39.7 1.8
Apr. 10.7	51.10 .22	14.9 0.2	28.41 .58	44.0 1.9	35.87 .25	14.0 2.0	6.37 .23	28.1 1.0	55.67 1.16	41.5 2.3
20.6	51.32 .20	14.7 0.3	28.99 .54	45.9 2.2	36.12 .22	16.0 2.3	6.60 .21	29.1 1.2	56.83 0.93	43.8 2.7
30.6	51.52 .18	14.4 0.4	29.51 .45	48.1 2.4	36.34 .17	18.3 2.6	6.81 .18	30.3 1.5	57.76 0.68	46.5 2.9
May 10.6	51.70 .15	14.0 0.5	29.96 .36	50.5 2.5	36.51 .14	20.9 2.8	6.99 .15	31.8 1.6	58.44 0.41	49.4 3.2
20.5	51.85 .12	13.5 0.6	30.32 .27	53.0 2.5	36.65 .09	23.7 2.9	7.14 .13	33.4 1.8	58.85 0.13	52.6 3.2
30.5	51.97 .09	12.9 0.5	30.59 .18	55.5 2.6	36.74 .05	26.6 2.9	7.27 .09	35.2 1.7	58.98 0.16	55.8 3.3
June 9.5	52.06 .05	12.4 0.6	30.77 .08	58.1 2.5	36.79 .01	29.5 2.8	7.36 .06	36.9 1.7	58.82 0.43	59.1 3.1
19.5	52.11 .02	11.8 0.6	30.85 .03	60.6 2.4	36.80 .04	32.3 2.6	7.42 .02	38.6 1.6	58.39 0.69	62.2 2.9
29.5	52.13 .02	11.2 0.6	30.82 .12	63.0 2.2	36.76 .08	34.9 2.4	7.44 .02	40.2 1.6	57.70 0.93	65.1 2.7
July 9.4	52.11 .06	10.6 0.5	30.70 .22	65.2 2.0	36.68 .12	37.3 2.1	7.42 .05	41.8 1.3	56.77 1.15	67.8 2.3
19.4	52.05 .09	10.1 0.5	30.48 .31	67.2 1.7	36.56 .16	39.4 1.8	7.37 .09	43.1 1.2	55.62 1.34	70.1 2.0
29.4	51.96 .11	9.6 0.4	30.17 .39	68.9 1.3	36.40 .19	41.2 1.4	7.28 .12	44.3 1.0	54.28 1.50	72.1 1.5
Aug. 8.3	51.85 .15	9.2 0.4	29.78 .45	70.2 0.9	36.21 .23	42.6 1.0	7.16 .14	45.3 0.8	52.78 1.63	73.6 1.0
18.3	51.70 .16	8.8 0.3	29.33 .50	71.1 0.5	35.98 .24	43.6 0.6	7.02 .17	46.1 0.5	51.15 1.72	74.6 0.6
28.3	51.54 .17	8.5 0.3	28.83 .54	71.6 0.1	35.74 .25	44.2 0.1	6.85 .18	46.6 0.3	49.43 1.77	75.2 0.0
Sept. 7.2	51.37 .18	8.2 0.2	28.31 .53	71.5 0.5	35.49 .26	44.3 0.3	6.67 .18	46.9 0.0	47.66 1.78	75.2 0.5
17.2	51.19 .17	8.0 0.1	27.78 .51	71.0 0.9	35.23 .25	44.0 0.8	6.49 .19	46.9 0.2	45.88 1.75	74.7 0.9
27.2	51.02 .15	7.9 0.1	27.27 .47	70.1 1.4	34.98 .24	43.2 1.3	6.30 .17	46.7 0.4	44.13 1.67	73.8 1.5
Oct. 7.2	50.87 .12	7.8 0.1	26.80 .39	68.7 1.8	34.74 .20	41.9 1.7	6.13 .15	46.3 0.8	42.46 1.57	72.3 1.9
17.1	50.75 .10	7.9 0.1	26.41 .31	66.9 2.2	34.54 .17	40.2 2.0	5.98 .11	45.5 1.0	40.89 1.41	70.4 2.4
27.1	50.65 .05	8.0 0.4	26.10 .20	64.7 2.4	34.37 .13	38.2 2.5	5.87 .08	44.5 1.2	39.48 1.21	68.0 2.7
Nov. 6.1	50.60 .00	8.4 0.4	25.90 .09	62.3 2.5	34.24 .07	35.7 2.8	5.79 .04	43.3 1.5	38.27 0.98	65.3 3.1
16.1	50.60 .05	8.8 0.7	25.81 .05	59.8 2.6	34.17 .01	32.9 3.0	5.75 .01	41.8 1.8	37.29 0.71	62.2 3.3
26.0	50.65 .10	9.5 0.8	25.86 .17	57.2 2.6	34.16 .04	29.9 3.2	5.76 .07	40.0 1.9	36.58 0.42	58.9 3.5
Dec. 6.0	50.75 .14	10.3 1.0	26.03 .29	54.6 2.4	34.20 .11	26.7 3.4	5.83 .11	38.1 2.0	36.16 0.11	55.4 3.6
16.0	50.89 .19	11.3 1.1	26.32 .41	52.2 2.2	34.31 .15	23.3 3.3	5.94 .15	36.1 2.2	36.05 0.19	51.8 3.6
25.9	51.08 .23	12.4 1.2	26.73 .52	50.0 1.9	34.46 .22	20.0 3.2	6.09 .19	33.9 2.1	36.24 0.51	48.2 3.4
35.9	51.31	13.6	27.25	48.1	34.68	16.8	6.28	31.8	36.75	44.8

FIXED STARS, 1903.

(CONSTANTS OF STRUVE AND PETERS)

37

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	δ Herculis.		η Ophiuchi.		α Herculis.		π Herculis.		θ Ophiuchi.	
	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion South.
	h m 16 58	° ' " +33 42	h m 17 04	° ' " -15 36	h m 17 10	° ' " +14 29	h m 17 11	° ' " +36 54	h m 17 15	° ' " -24 54
Jan. 0.9	0.16	32.5	48.04	9.0	12.48	67.3	38.68	68.4	2.23	0.5
10.9	0.37	29.5	48.27	9.8	12.68	65.0	38.89	65.4	2.46	0.7
20.9	0.62	26.8	48.52	10.6	12.91	62.8	39.13	62.5	2.72	1.0
30.9	0.91	24.4	48.80	11.5	13.17	60.9	39.41	60.0	3.02	1.4
Feb. 9.8	1.21	22.4	49.10	12.3	13.45	59.2	39.71	57.9	3.32	1.8
19.8	1.53	20.9	49.40	13.0	13.73	57.9	40.03	56.3	3.64	2.2
Mar. 1.8	1.85	20.0	49.71	13.6	14.02	57.0	40.36	55.2	3.96	2.6
11.8	2.17	19.6	50.01	14.1	14.32	56.5	40.69	54.8	4.28	3.0
21.7	2.48	19.8	50.30	14.4	14.60	56.4	41.02	54.9	4.60	3.3
31.7	2.78	20.6	50.59	14.6	14.87	56.8	41.33	55.6	4.91	3.6
Apr. 10.7	3.06	21.9	50.86	14.7	15.13	57.6	41.62	56.9	5.20	3.9
20.6	3.31	23.6	51.11	14.6	15.37	58.8	41.89	58.7	5.48	4.1
30.6	3.54	25.7	51.35	14.4	15.59	60.2	42.13	60.8	5.74	4.2
May 10.6	3.73	28.2	51.56	14.1	15.79	61.9	42.34	63.3	5.97	4.3
20.6	3.89	30.8	51.74	13.8	15.96	63.8	42.51	66.0	6.18	4.5
30.5	4.00	33.5	51.90	13.4	16.10	65.8	42.64	68.9	6.35	4.6
June 9.5	4.08	36.3	52.02	13.0	16.20	67.8	42.73	71.8	6.50	4.7
19.5	4.12	39.0	52.11	12.7	16.27	69.8	42.78	74.6	6.60	4.9
29.5	4.11	41.6	52.15	12.3	16.30	71.8	42.78	77.4	6.67	5.1
July 9.4	4.06	44.0	52.16	12.0	16.29	73.6	42.74	80.0	6.69	5.2
19.4	3.97	46.1	52.13	11.7	16.25	75.2	42.65	82.3	6.66	5.4
29.4	3.84	48.0	52.07	11.4	16.17	76.6	42.52	84.3	6.60	5.6
Aug. 8.3	3.68	49.5	51.96	11.2	16.05	77.8	42.35	86.0	6.50	5.7
18.3	3.48	50.6	51.83	11.0	15.91	78.7	42.15	87.2	6.36	5.8
28.3	3.27	51.4	51.67	10.8	15.74	79.4	41.92	88.1	6.20	5.8
Sept. 7.3	3.03	51.7	51.50	10.6	15.56	79.8	41.68	88.6	6.02	5.7
17.2	2.80	51.6	51.31	10.4	15.36	79.9	41.43	88.6	5.82	5.6
27.2	2.56	51.1	51.13	10.2	15.17	79.7	41.17	88.2	5.63	5.4
Oct. 7.2	2.34	50.1	50.96	10.1	14.99	79.2	40.93	87.3	5.44	5.1
17.2	2.14	48.7	50.81	10.0	14.82	78.4	40.71	86.0	5.28	4.7
27.1	1.97	47.0	50.69	10.0	14.69	77.3	40.52	84.2	5.15	4.4
Nov. 6.1	1.84	44.8	50.62	10.0	14.59	75.9	40.38	82.1	5.06	4.0
16.1	1.76	42.3	50.59	10.2	14.54	74.2	40.27	79.6	5.02	3.7
26.0	1.74	39.5	50.61	10.5	14.53	72.3	40.23	76.8	5.02	3.4
Dec. 6.0	1.77	36.6	50.68	10.9	14.57	70.2	40.24	73.8	5.09	3.2
16.0	1.86	33.4	50.79	11.4	14.66	67.9	40.30	70.6	5.20	3.1
26.0	1.99	30.3	50.95	12.1	14.79	65.6	40.42	67.4	5.36	3.2
35.9	2.18	27.2	51.16	12.8	14.97	63.2	40.59	64.2	5.57	3.3

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	δ Ophiuchi.			δ Ara.			β Draconis.			α Ophiuchi.			ϵ Herculis.		
	Right Ascension.	Declina- tion South.		Right Ascension.	Declina- tion South.		Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.	
	h m	° '		h m	° '		h m	° '		h m	° '		h m	° '	
	17 20	-24 05		17 22	-60 35		17 28	+52 22		17 30	+12 37		17 36	+46 03	
	s	"		s	"		s	"		s	"		s	"	
Jan. 1.0	25.84	1.0	18.66	58.6	12.38	26.0	24.91	55.2	41.89	32.0					
10.9	26.06	1.3	19.04	56.8	12.58	22.6	25.09	53.1	42.07	28.7					
20.9	26.32	1.6	19.47	55.4	12.84	19.4	25.31	51.0	42.30	25.6					
30.9	26.61	2.0	19.96	54.2	13.14	16.6	25.55	49.1	42.58	22.8					
Feb. 9.8	26.91	2.4	20.48	53.3	13.49	14.2	25.82	47.4	42.89	20.4					
19.8	27.23	2.8	21.03	52.7	13.87	12.3	26.09	46.1	43.22	18.5					
Mar. 1.8	27.55	3.2	21.60	52.5	14.27	11.1	26.38	45.2	43.58	17.3					
11.8	27.86	3.6	22.17	52.6	14.68	10.5	26.67	44.6	43.95	16.6					
21.7	28.18	3.9	22.73	53.0	15.08	10.6	26.95	44.5	44.31	16.6					
31.7	28.49	4.1	23.28	53.7	15.48	11.4	27.23	44.8	44.67	17.2					
Apr. 10.7	28.78	4.3	23.80	54.7	15.85	12.7	27.50	45.6	45.01	18.4					
20.7	29.06	4.4	24.30	55.9	16.19	14.6	27.75	46.6	45.33	20.1					
30.6	29.32	4.5	24.76	57.3	16.50	16.9	27.98	48.0	45.62	22.3					
May 10.6	29.55	4.6	25.17	59.0	16.76	19.6	28.20	49.6	45.87	24.9					
20.6	29.76	4.7	25.53	60.8	16.97	22.7	28.38	51.4	46.08	27.8					
30.5	29.94	4.7	25.82	62.8	17.13	25.9	28.54	53.4	46.24	30.9					
June 9.5	30.09	4.8	26.06	64.9	17.23	29.1	28.67	55.3	46.36	34.0					
19.5	30.20	4.9	26.22	67.0	17.27	32.4	28.76	57.3	46.42	37.2					
29.5	30.26	5.0	26.30	69.1	17.25	35.6	28.81	59.2	46.43	40.3					
July 9.4	30.29	5.2	26.31	71.1	17.17	38.6	28.82	61.0	46.39	43.2					
19.4	30.27	5.3	26.24	73.0	17.04	41.2	28.79	62.6	46.29	45.9					
29.4	30.21	5.4	26.09	74.7	16.85	43.6	28.73	64.1	46.15	48.3					
Aug. 8.4	30.11	5.5	25.87	76.2	16.61	45.7	28.63	65.3	45.96	50.3					
18.3	29.98	5.6	25.59	77.3	16.33	47.3	28.49	66.3	45.72	52.0					
28.3	29.82	5.6	25.27	78.2	16.01	48.4	28.34	67.0	45.46	53.2					
Sept. 7.3	29.64	5.6	24.90	78.6	15.67	49.1	28.16	67.4	45.17	53.9					
17.2	29.44	5.5	24.52	78.6	15.31	49.2	27.97	67.6	44.87	54.2					
27.2	29.25	5.3	24.14	78.2	14.96	48.9	27.77	67.6	44.56	54.0					
Oct. 7.2	29.06	5.0	23.77	77.4	14.61	48.0	27.59	67.2	44.26	53.3					
17.2	28.90	4.7	23.44	76.2	14.29	46.7	27.42	66.5	43.98	52.1					
27.1	28.77	4.4	23.16	74.6	14.00	44.8	27.27	65.5	43.73	50.4					
Nov. 6.1	28.68	4.1	22.96	72.8	13.76	42.5	27.16	64.3	43.52	48.3					
16.1	28.63	3.8	22.84	70.8	13.57	39.8	27.09	62.8	43.36	45.8					
26.1	28.63	3.6	22.80	68.6	13.44	36.8	27.07	61.0	43.25	43.0					
Dec. 6.0	28.69	3.4	22.86	66.4	13.38	33.5	27.09	59.1	43.21	39.8					
16.0	28.80	3.4	23.02	64.2	13.40	30.0	27.16	57.0	43.22	36.5					
26.0	28.96	3.5	23.26	62.2	13.48	26.4	27.28	54.8	43.30	33.0					
35.9	29.16	3.7	23.59	60.3	13.64	22.9	27.44	52.5	43.45	29.6					

FIXED STARS, 1903.

(CONSTANTS OF STRUVE AND PETERS.)

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APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	ω Draconis.		μ Herculis.		ψ ¹ Draconis.		θ Herculis.		γ Draconis.	
	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.
	h m 17 37	° ' " +68 47	h m 17 42	° ' " +27 46	h m 17 43	° ' " +72 11	h m 17 52	° ' " +37 15	h m 17 54	° ' " +51 29
Jan. 1.0	27.27	73.6	38.52	43.2	35.10	51.6	54.17	52.8	19.25	65.7
10.9	27.49	70.1 3.5	38.69	40.4 2.8	35.33	48.1 3.5	54.32	49.7 3.1	19.40	62.2 3.5
20.9	27.82	66.8 3.3	38.89	37.7 2.7	35.68	44.8 3.3	54.52	46.8 2.9	19.62	59.0 3.2
30.9	28.25	63.9 2.9	39.13	35.3 2.4	36.15	41.8 3.0	54.76	44.0 2.8	19.89	56.0 3.0
Feb. 9.9	28.76	61.4 2.5	39.40	33.2 2.1	36.72	39.3 2.5	55.04	41.7 2.3	20.21	53.4 2.6
19.8	29.33	59.4 2.0	39.68	31.5 1.7	37.37	37.3 2.0	55.33	39.8 1.9	20.56	51.4 2.0
Mar. 1.8	29.94	58.1 1.3	39.98	30.3 1.2	38.08	35.9 1.4	55.65	38.5 1.3	20.94	49.9 1.5
11.8	30.59	57.5 0.6	40.28	29.7 0.6	38.83	35.2 0.7	55.97	37.7 0.8	21.33	49.1 0.8
21.7	31.23	57.5 0.0	40.58	29.5 0.1	39.58	35.1 0.1	56.30	37.6 0.1	21.73	48.9 0.2
31.7	31.86	58.2 0.7	40.88	29.9 0.4	40.32	35.7 0.6	56.63	38.0 0.4	22.13	49.3 0.4
Apr. 10.7	32.46	59.5 1.3	41.17	30.9 1.0	41.02	36.9 1.2	56.94	38.9 0.9	22.51	50.4 1.1
20.7	33.00	61.4 1.9	41.44	32.2 1.3	41.66	38.8 1.9	57.24	40.5 1.6	22.87	52.0 1.6
30.6	33.48	63.8 2.4	41.69	34.0 1.8	42.23	41.1 2.3	57.51	42.4 1.9	23.20	54.2 2.2
May 10.6	33.87	66.6 2.8	41.92	36.1 2.1	42.70	43.8 2.7	57.76	44.8 2.4	23.49	56.8 2.6
20.6	34.18	69.7 3.1	42.11	38.5 2.4	43.06	46.8 3.0	57.98	47.4 2.6	23.73	59.7 2.9
30.6	34.40	73.0 3.3	42.28	41.0 2.5	43.31	50.1 3.3	58.16	50.2 2.8	23.92	62.8 3.1
June 9.5	34.51	76.4 3.4	42.40	43.7 2.7	43.44	53.5 3.4	58.29	53.2 3.0	24.06	66.1 3.3
19.5	34.52	79.8 3.4	42.49	46.3 2.6	43.45	56.9 3.4	58.38	56.2 3.0	24.14	69.4 3.3
29.5	34.42	83.1 3.3	42.54	48.9 2.6	43.33	60.2 3.3	58.43	59.1 2.9	24.16	72.6 3.2
July 9.4	34.23	86.2 3.1	42.54	51.3 2.4	43.10	63.3 3.1	58.43	61.9 2.8	24.12	75.7 3.1
19.4	33.94	89.1 2.9	42.50	53.5 2.2	42.75	66.2 2.9	58.38	64.5 2.6	24.02	78.6 2.9
29.4	33.56	91.7 2.6	42.42	55.5 2.0	42.30	68.8 2.6	58.28	66.9 2.4	23.87	81.3 2.7
Aug. 8.4	33.11	93.8 2.1	42.30	57.2 1.7	41.76	71.0 2.2	58.14	68.9 2.0	23.66	83.6 2.3
18.3	32.58	95.6 1.8	42.14	58.6 1.4	41.14	72.8 1.8	57.96	70.6 1.7	23.41	85.4 1.8
28.3	32.01	96.9 1.3	41.96	59.7 1.1	40.45	74.1 1.3	57.75	71.9 1.3	23.11	86.9 1.5
Sept. 7.3	31.39	97.6 0.7	41.75	60.4 0.7	39.72	75.0 0.9	57.51	72.8 0.9	22.79	87.9 1.0
17.3	30.75	97.9 0.3	41.53	60.7 0.3	38.95	75.3 0.3	57.26	73.2 0.4	22.45	88.4 0.5
27.2	30.11	97.6 0.3	41.31	60.6 0.1	38.18	75.1 0.2	57.00	73.2 0.0	22.10	88.4 0.0
Oct. 7.2	29.48	96.9 0.7	41.09	60.1 0.5	37.42	74.4 0.7	56.74	72.7 0.5	21.75	87.9 0.5
17.2	28.87	95.6 1.3	40.88	59.2 0.9	36.68	73.2 1.2	56.50	71.8 0.9	21.42	86.8 1.1
27.1	28.32	93.7 1.9	40.70	57.9 1.3	36.01	71.4 1.8	56.28	70.5 1.3	21.12	85.3 1.5
Nov. 6.1	27.83	91.4 2.3	40.55	56.2 1.7	35.40	69.2 2.2	56.10	68.7 1.8	20.85	83.3 2.0
16.1	27.43	88.7 2.7	40.45	54.2 2.0	34.89	66.5 2.7	55.96	66.5 2.2	20.64	80.9 2.4
26.1	27.12	85.7 3.0	40.39	51.8 2.4	34.49	63.5 3.0	55.87	64.0 2.5	20.48	78.1 2.8
Dec. 6.0	26.92	82.3 3.4	40.38	49.2 2.6	34.22	60.2 3.3	55.83	61.1 2.9	20.39	75.0 3.1
16.0	26.83	78.7 3.6	40.42	46.5 2.9	34.08	56.6 3.6	55.84	58.1 3.0	20.37	71.6 3.4
26.0	26.86	75.1 3.7	40.51	43.6 2.9	34.07	53.0 3.6	55.91	54.9 3.2	20.42	68.1 3.5
36.0	27.01	71.4 3.7	40.65	40.7 2.9	34.21	49.4 3.6	56.04	51.7 3.2	20.53	64.5 3.6

FIXED STARS, 1903.

(CONSTANTS OF STRUVE AND PETERS.)

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	γ^s Sagittarii.		ϵ^o Herculis.		μ Sagittarii.		η Serpentis.		λ Sagittarii.	
	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion South.
	h m 17 59	° ' " -30 25	h m 18 03	° ' " +28 44	h m 18 07	° ' " -21 04	h m 18 16	° ' " - 2 55	h m 18 21	° ' " -25 28
	s	"	s	"	s	"	s	"	s	"
Jan. 1.0	33.53	22.2	44.30	62.6	56.76	55.2	16.48	19.1	58.05	23.6
11.0	33.73	21.8	44.44	59.7	56.94	55.4	16.63	20.4	58.21	23.4
20.9	33.96	21.6	44.63	57.0	57.15	55.6	16.81	21.6	58.42	23.3
30.9	34.23	21.4	44.85	54.5	57.39	55.8	17.02	22.8	58.66	23.2
Feb. 9.9	34.52	21.2	45.10	52.4	57.66	56.0	17.26	23.8	58.92	23.1
19.8	34.84	21.2	45.37	50.6	57.94	56.2	17.51	24.6	59.20	23.1
Mar. 1.8	35.16	21.1	45.66	49.3	58.24	56.4	17.78	25.2	59.51	23.0
11.8	35.49	21.1	45.96	48.5	58.54	56.4	18.06	25.6	59.82	22.9
21.8	35.82	21.0	46.27	48.3	58.85	56.4	18.34	25.7	60.13	22.7
31.7	36.16	21.0	46.57	48.6	59.16	56.2	18.63	25.5	60.45	22.5
Apr. 10.7	36.48	21.0	46.87	49.4	59.46	56.0	18.91	25.0	60.76	22.2
20.7	36.79	21.0	47.15	50.8	59.75	55.7	19.18	24.3	61.07	21.9
30.7	37.09	21.1	47.42	52.5	60.03	55.4	19.44	23.4	61.37	21.6
May 10.6	37.37	21.2	47.66	54.6	60.30	55.0	19.69	22.3	61.66	21.4
20.6	37.63	21.4	47.88	57.0	60.55	54.7	19.92	21.1	61.92	21.2
30.6	37.86	21.6	48.06	59.6	60.76	54.4	20.12	19.9	62.15	21.0
June 9.5	38.05	21.9	48.21	62.3	60.95	54.1	20.29	18.6	62.36	20.9
19.5	38.21	22.2	48.32	65.0	61.10	53.8	20.43	17.3	62.53	20.9
29.5	38.32	22.6	48.39	67.7	61.21	53.7	20.54	16.1	62.66	20.9
July 9.5	38.38	23.1	48.41	70.3	61.28	53.6	20.60	14.9	62.75	21.1
19.4	38.40	23.6	48.39	72.7	61.31	53.6	20.63	13.9	62.79	21.3
29.4	38.37	24.1	48.33	74.9	61.29	53.6	20.61	13.0	62.78	21.6
Aug. 8.4	38.30	24.6	48.22	76.8	61.23	53.7	20.55	12.3	62.73	21.9
18.4	38.18	25.0	48.08	78.4	61.13	53.7	20.45	11.7	62.63	22.2
28.3	38.03	25.4	47.90	79.6	60.99	53.8	20.32	11.2	62.50	22.4
Sept. 7.3	37.84	25.6	47.70	80.5	60.82	53.9	20.17	10.9	62.33	22.7
17.3	37.64	25.8	47.48	81.0	60.64	54.0	20.00	10.7	62.15	22.9
27.2	37.43	25.8	47.25	81.1	60.45	54.0	19.81	10.7	61.95	23.0
Oct. 7.2	37.23	25.6	47.02	80.8	60.26	54.0	19.63	10.8	61.75	23.0
17.2	37.04	25.4	46.81	80.0	60.08	54.0	19.46	11.1	61.56	23.0
27.2	36.87	25.0	46.61	78.9	59.92	53.9	19.30	11.6	61.39	22.9
Nov. 6.1	36.74	24.6	46.45	77.4	59.80	53.8	19.17	12.1	61.25	22.7
16.1	36.65	24.0	46.33	75.5	59.71	53.7	19.08	12.8	61.15	22.4
26.1	36.62	23.5	46.24	73.3	59.67	53.7	19.03	13.7	61.10	22.2
Dec. 6.1	36.64	23.0	46.21	70.8	59.68	53.7	19.03	14.8	61.10	21.9
16.0	36.71	22.5	46.23	68.1	59.74	53.7	19.06	15.9	61.14	21.7
26.0	36.83	22.0	46.30	65.3	59.84	53.8	19.14	17.1	61.24	21.5
36.0	37.00	21.6	46.42	62.4	59.99	54.0	19.27	18.4	61.38	21.4

FIXED STARS, 1903.

(CONSTANTS OF STRUVE AND PETERS.)

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APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	γ Draconis.		ι Aquilæ.		ζ Pavonis.		α Lyrae. (Vega.)		β Lyrae.	
	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.
	h m 18 22	° ' " +72 41	h m 18 29	° ' " 8 18	h m 18 31	° ' " -71 30	h m 18 33	° ' " +38 41	h m 18 46	° ' " +33 14
Jan. 1.0	43.92	34.7	54.77	35.5	38.54	32.1	37.86	43.5	28.67	68.1
11.0	44.03	31.1	54.92	36.4	38.88	29.4	37.97	40.4	28.76	65.2
21.0	44.27	27.7	55.09	37.3	39.33	26.8	38.12	37.4	28.90	62.3
30.9	44.64	24.4	55.30	38.1	39.88	24.4	38.32	34.5	29.08	59.6
Feb. 9.9	45.13	21.6	55.53	38.8	40.53	22.4	38.56	32.0	29.30	57.2
19.9	45.73	19.2	55.78	39.4	41.25	20.6	38.82	29.9	29.55	55.2
Mar. 1.8	46.40	17.3	56.05	39.8	42.02	19.2	39.12	28.2	29.82	53.6
11.8	47.14	16.1	56.33	40.0	42.83	18.1	39.44	27.1	30.12	52.5
21.8	47.90	15.5	56.61	40.0	43.67	17.4	39.76	26.6	30.42	51.9
31.8	48.67	15.6	56.90	39.7	44.52	17.1	40.10	26.7	30.74	51.9
Apr. 10.7	49.43	16.4	57.19	39.2	45.36	17.2	40.43	27.4	31.05	52.5
20.7	50.15	17.7	57.47	38.6	46.18	17.6	40.75	28.7	31.36	53.6
30.7	50.80	19.6	57.74	37.8	46.97	18.5	41.06	30.4	31.66	55.2
May 10.6	51.38	22.0	58.00	36.8	47.70	19.7	41.34	32.6	31.94	57.2
20.6	51.85	24.8	58.25	35.8	48.37	21.2	41.60	35.1	32.20	59.6
30.6	52.22	27.9	58.47	34.8	48.97	23.0	41.82	37.9	32.43	62.3
June 9.6	52.48	31.2	58.66	33.7	49.47	25.1	42.00	40.9	32.62	65.1
19.5	52.60	34.6	58.82	32.7	49.86	27.4	42.14	44.0	32.77	68.0
29.5	52.60	38.1	58.94	31.7	50.15	29.8	42.23	47.1	32.88	70.9
July 9.5	52.48	41.4	59.02	30.8	50.31	32.3	42.27	50.1	32.94	73.8
19.5	52.23	44.6	59.06	30.1	50.35	34.8	42.26	53.0	32.96	76.6
29.4	51.87	47.5	59.06	29.4	50.26	37.2	42.20	55.6	32.92	79.2
Aug. 8.4	51.40	50.2	59.01	28.9	50.05	39.5	42.09	58.0	32.84	81.5
18.4	50.83	52.5	58.92	28.5	49.72	41.6	41.94	60.1	32.72	83.5
28.4	50.18	54.4	58.80	28.2	49.29	43.3	41.75	61.8	32.56	85.2
Sept. 7.3	49.47	55.8	58.66	28.0	48.78	44.7	41.53	63.1	32.36	86.5
17.3	48.71	56.7	58.49	27.9	48.20	45.7	41.28	64.0	32.14	87.4
27.3	47.92	57.1	58.31	27.9	47.59	46.1	41.02	64.5	31.90	87.9
Oct. 7.2	47.12	57.0	58.12	28.0	46.96	46.1	40.75	64.4	31.66	88.0
17.2	46.34	56.4	57.95	28.2	46.36	45.5	40.49	64.0	31.42	87.7
27.2	45.60	55.2	57.79	28.5	45.80	44.5	40.25	63.0	31.20	86.9
Nov. 6.2	44.91	53.5	57.66	28.9	45.31	43.0	40.04	61.6	31.00	85.7
16.1	44.30	51.4	57.56	29.4	44.91	41.1	39.86	59.7	30.83	84.0
26.1	43.79	48.7	57.50	30.0	44.63	38.8	39.72	57.5	30.70	82.0
Dec. 6.1	43.40	45.7	57.49	30.7	44.48	36.3	39.64	54.9	30.62	79.6
16.0	43.13	42.4	57.52	31.4	44.47	33.6	39.60	52.0	30.59	77.0
26.0	43.00	38.9	57.59	32.3	44.59	30.9	39.62	49.0	30.60	74.2
36.0	43.02	35.3	57.71	33.2	44.84	28.2	39.70	45.8	30.67	71.2

FIXED STARS, 1903.

(CONSTANTS OF STRUVE AND PETERS.)

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	♐ Sagittarii.		♈ Draconis.		♈ Lyrae.		♈ Aquilæ.		♈ Lyrae.	
	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.
	h m 18 49	° ' " -26 24	h m 18 49	° ' " +75 19	h m 18 55	° ' " +32 33	h m 19 00	° ' " +13 43	h m 19 03	° ' " +35 56
	s	"	s	"	s	"	s	"	s	"
Jan. 1.0	13.95	55.2	25.31	20.8	17.68	31.6	56.12	17.0	49.19	61.7
	11.0	14.09	54.9	25.31	17.3	17.76	56.22	15.0	49.26	58.7
	21.0	14.27	54.6	25.47	13.8	17.89	56.35	13.0	49.38	55.8
	30.9	14.48	54.3	25.80	10.5	18.06	56.52	11.1	49.54	53.0
Feb. 9.9	14.73	54.0	26.28	7.4	18.27	20.8	56.71	9.4	49.74	50.4
	19.9	14.99	53.7	26.88	4.8	18.51	56.93	8.0	49.98	48.2
Mar. 1.9	15.28	53.3	27.60	2.7	18.78	17.1	57.18	6.9	50.24	46.4
	11.8	15.58	53.0	28.41	1.1	19.07	57.44	6.2	50.53	45.2
	21.8	15.89	52.6	29.27	0.2	19.37	57.71	5.9	50.84	44.5
	31.8	16.21	52.1	30.16	0.0	19.68	57.99	6.0	51.16	44.4
Apr. 10.7	16.53	51.7	31.05	0.4	19.99	15.9	58.28	6.6	51.49	44.8
	20.7	16.85	51.2	31.91	1.4	20.30	58.56	7.5	51.81	45.8
	30.7	17.16	50.7	32.71	3.0	20.60	58.84	8.8	52.12	47.3
May 10.7	17.46	50.3	33.43	5.1	20.89	20.5	59.11	10.4	52.42	49.3
	20.6	17.74	49.9	34.04	7.7	21.15	59.36	12.3	52.69	51.6
	30.6	18.01	49.6	34.54	10.7	21.39	59.59	14.3	52.94	54.3
June 9.6	18.24	49.4	34.91	13.9	21.59	28.2	59.79	16.5	53.15	57.1
	19.6	18.44	49.3	35.13	17.2	21.75	59.96	18.7	53.32	60.1
	29.5	18.59	49.3	35.21	20.7	21.87	60.10	20.9	53.45	63.2
July 9.5	18.71	49.5	35.14	24.1	21.94	36.9	60.19	23.0	53.53	66.2
	19.5	18.77	49.7	34.92	27.5	21.97	60.24	25.0	53.56	69.1
	29.4	18.79	50.0	34.56	30.6	21.94	60.25	26.9	53.54	71.9
Aug. 8.4	18.76	50.4	34.06	33.5	21.87	44.6	60.22	28.5	53.47	74.4
	18.4	18.69	50.8	33.45	36.1	21.76	60.14	30.0	53.35	76.6
	28.4	18.57	51.2	32.74	38.4	21.60	60.03	31.1	53.19	78.5
Sept. 7.3	18.42	51.6	31.93	40.2	21.41	49.8	59.88	32.0	53.00	80.0
	17.3	18.24	51.9	31.06	41.5	21.20	59.71	32.7	52.78	81.2
	27.3	18.05	52.2	30.14	42.4	20.97	59.52	33.0	52.54	81.9
Oct. 7.3	17.85	52.4	29.20	42.7	20.73	51.5	59.33	33.1	52.29	82.1
	17.2	17.65	52.4	28.25	42.5	20.50	59.14	32.8	52.04	81.9
	27.2	17.47	52.4	27.34	41.8	20.27	58.96	32.3	51.80	81.3
Nov. 6.2	17.32	52.3	26.48	40.5	20.07	49.4	58.80	31.4	51.58	80.2
	16.1	17.20	52.1	25.69	38.8	19.90	58.67	30.3	51.40	78.7
	26.1	17.12	51.9	25.00	36.5	19.77	58.57	28.9	51.25	76.8
Dec. 6.1	17.09	51.6	24.44	33.8	19.68	43.6	58.52	27.3	51.14	74.5
	16.1	17.11	51.3	24.01	30.7	19.64	58.50	25.5	51.08	71.9
	26.0	17.18	51.0	23.74	27.4	19.64	58.53	23.5	51.07	69.0
	36.0	17.29	50.7	23.63	23.9	19.70	58.60	21.5	51.11	66.1

FIXED STARS, 1903.

(CONSTANTS OF STRUVE AND PETERS.)

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APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	♌ Sagittarii.		♐ Draconis.		♈ Lyrae.		♉ Draconis.		♏ Aquilæ.	
	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.
	h m 19 11	° ' -19 07	h m 19 12	° ' +67 29	h m 19 12	° ' +37 57	h m 19 17	° ' +73 10	h m 19 20	° ' + 2 55
Jan. 1.0	56.59	25.6	29.04	39.2	58.79	49.3	21.29	44.5	35.55	24.3
11.0	56.70	25.6	29.02	35.7	58.84	46.3	21.21	41.1	35.64	22.9
21.0	56.84	25.7	29.11	32.2	58.95	43.3	21.28	37.6	35.76	21.6
30.9	57.02	25.7	29.30	28.8	59.10	40.4	21.48	34.2	35.91	20.3
Feb. 9.9	57.23	25.7	29.60	25.7	59.30	37.8	21.83	31.0	36.09	19.1
19.9	57.47	25.6	29.98	22.9	59.53	35.5	22.30	28.2	36.30	18.2
Mar. 1.9	57.73	25.4	30.44	20.5	59.79	33.6	22.87	25.8	36.53	17.5
11.8	58.00	25.1	30.96	18.8	60.08	32.3	23.54	23.9	36.78	17.1
21.8	58.28	24.7	31.54	17.6	60.39	31.5	24.27	22.6	37.04	17.0
31.8	58.58	24.1	32.14	17.1	60.71	31.2	25.04	22.0	37.32	17.3
Apr. 10.8	58.88	23.5	32.75	17.2	61.04	31.6	25.82	22.1	37.60	17.9
20.7	59.19	22.8	33.35	18.0	61.38	32.5	26.60	22.7	37.88	18.8
30.7	59.49	22.0	33.93	19.4	61.70	34.0	27.35	24.0	38.17	19.9
May 10.7	59.79	21.2	34.46	21.4	62.01	35.9	28.04	25.9	38.44	21.3
20.6	60.07	20.4	34.94	23.8	62.29	38.2	28.65	28.3	38.71	22.9
30.6	60.33	19.6	35.35	26.6	62.55	40.9	29.17	31.0	38.95	24.5
June 9.6	60.57	18.9	35.68	29.8	62.77	43.8	29.58	34.1	39.18	26.3
19.6	60.77	18.3	35.92	33.2	62.95	46.8	29.88	37.4	39.37	28.1
29.5	60.94	17.8	36.07	36.7	63.09	49.9	30.05	40.9	39.53	29.8
July 9.5	61.07	17.5	36.11	40.2	63.18	53.0	30.09	44.4	39.65	31.4
19.5	61.16	17.2	36.06	43.6	63.22	56.0	30.00	47.9	39.73	32.9
29.5	61.20	17.1	35.91	47.0	63.20	58.9	29.78	51.2	39.76	34.3
Aug. 8.4	61.19	17.1	35.66	50.1	63.14	61.5	29.44	54.4	39.75	35.5
18.4	61.14	17.2	35.33	52.9	63.02	63.9	28.98	57.3	39.70	36.5
28.4	61.04	17.4	34.92	55.4	62.86	65.9	28.43	59.8	39.61	37.3
Sept. 7.3	60.91	17.6	34.44	57.5	62.67	67.6	27.78	62.0	39.49	38.0
17.3	60.75	17.8	33.91	59.2	62.44	68.8	27.07	63.8	39.34	38.4
27.3	60.58	18.0	33.34	60.4	62.20	69.6	26.30	65.1	39.17	38.6
Oct. 7.3	60.39	18.3	32.74	61.0	61.94	70.0	25.50	65.8	38.99	38.6
17.2	60.20	18.5	32.14	61.1	61.69	70.0	24.68	66.1	38.81	38.4
27.2	60.02	18.7	31.55	60.7	61.44	69.4	23.88	65.8	38.64	38.0
Nov. 6.2	59.87	18.8	30.99	59.7	61.21	68.4	23.11	64.9	38.48	37.4
16.2	59.74	19.0	30.47	58.2	61.01	66.9	22.39	63.5	38.35	36.6
26.1	59.66	19.1	30.02	56.2	60.85	65.1	21.75	61.6	38.26	35.7
Dec. 6.1	59.61	19.2	29.64	53.7	60.73	62.8	21.20	59.2	38.20	34.6
16.1	59.60	19.3	29.35	50.8	60.65	60.2	20.77	56.4	38.18	33.3
26.0	59.64	19.4	29.16	47.5	60.63	57.3	20.46	53.2	38.20	32.0
36.0	59.73	19.5	29.07	44.1	60.65	54.3	20.29	49.8	38.26	30.6

FIXED STARS, 1903.

(CONSTANTS OF STRUVE AND PETERS.)

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	β Cygni.		κ Aquilæ.		β Sagittæ.		γ Aquilæ.		δ Cygni.			
	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.		
	h m 19 26	° ' " +27 45	h m 19 31	° ' " - 7 14	h m 19 36	° ' " +17 15	h m 19 41	° ' " +10 22	h m 19 41	° ' " +44 53		
	s	"	s	"	s	"	s	"	s	"		
Jan. 1.0	47.51	.06	39.51	.08	40.60	.05	38.00	.05	55.31	.01	50.1	3.1
11.0	47.57	.09	39.59	.11	40.65	.10	38.05	.10	55.32	.06	47.0	3.2
21.0	47.66	.14	39.70	.15	40.75	.13	38.15	.13	55.38	.12	43.8	3.1
31.0	47.80	.17	39.85	.18	40.88	.16	38.28	.16	55.50	.17	40.7	2.9
Feb. 9.9	47.97	.21	40.03	.21	41.04	.19	38.44	.18	55.67	.21	37.8	2.6
19.9	48.18	.23	40.24	.22	41.23	.22	38.62	.22	55.88	.25	35.2	2.2
Mar. 1.9	48.41	.26	40.46	.25	41.45	.24	38.84	.23	56.13	.29	33.0	1.7
11.9	48.67	.28	40.71	.26	41.69	.26	39.07	.26	56.42	.32	31.3	1.1
21.8	48.95	.29	40.97	.28	41.95	.28	39.33	.27	56.74	.34	30.2	0.6
31.8	49.24	.30	41.25	.28	42.23	.28	39.60	.28	57.08	.36	29.6	0.0
Apr. 10.8	49.54	.31	41.53	.29	42.51	.29	39.88	.28	57.44	.36	29.6	0.7
20.7	49.85	.30	41.82	.29	42.80	.30	40.16	.29	57.80	.36	30.3	1.2
30.7	50.15	.30	42.11	.29	43.10	.30	40.45	.28	58.16	.35	31.5	1.7
May 10.7	50.45	.27	42.40	.28	43.38	.27	40.73	.28	58.51	.33	33.2	2.3
20.7	50.72	.26	42.68	.26	43.65	.26	41.01	.25	58.84	.30	35.5	2.6
30.6	50.98	.23	42.94	.23	43.91	.23	41.26	.24	59.14	.26	38.1	2.9
June 9.6	51.21	.19	43.17	.21	44.14	.20	41.50	.20	59.40	.22	41.0	3.1
19.6	51.40	.15	43.38	.18	44.34	.16	41.70	.18	59.62	.18	44.1	3.2
29.6	51.55	.11	43.56	.13	44.50	.13	41.88	.13	59.80	.12	47.3	3.3
July 9.5	51.66	.06	43.69	.10	44.63	.08	42.01	.09	59.92	.06	50.6	3.3
19.5	51.72	.02	43.79	.05	44.71	.04	42.10	.05	59.98	.01	53.9	3.2
29.5	51.74	.03	43.84	.00	44.75	.01	42.15	.00	59.99	.05	57.1	3.0
Aug. 8.4	51.71	.08	43.84	.03	44.74	.05	42.15	.04	59.94	.11	60.1	2.7
18.4	51.63	.11	43.81	.08	44.69	.09	42.11	.08	59.83	.15	62.8	2.4
28.4	51.52	.16	43.73	.11	44.60	.13	42.03	.11	59.68	.20	65.2	2.1
Sept. 7.4	51.36	.18	43.62	.15	44.47	.15	41.92	.15	59.48	.24	67.3	1.7
17.3	51.18	.20	43.47	.16	44.32	.18	41.77	.17	59.24	.26	69.0	1.3
27.3	50.98	.22	43.31	.18	44.14	.19	41.60	.18	58.98	.28	70.3	0.8
Oct. 7.3	50.76	.22	43.13	.18	43.95	.20	41.42	.18	58.70	.29	71.1	0.3
17.3	50.54	.21	42.95	.17	43.75	.19	41.24	.18	58.41	.29	71.4	0.2
27.2	50.33	.20	42.78	.15	43.56	.17	41.06	.17	58.12	.27	71.2	0.7
Nov. 6.2	50.13	.17	42.63	.13	43.39	.15	40.89	.14	57.85	.25	70.5	1.2
16.2	49.96	.14	42.50	.10	43.24	.12	40.75	.11	57.60	.21	69.3	1.7
26.1	49.82	.10	42.40	.06	43.12	.09	40.64	.08	57.39	.18	67.6	2.1
Dec. 6.1	49.72	.06	42.34	.03	43.03	.05	40.56	.05	57.21	.13	65.5	2.5
16.1	49.66	.01	42.31	.02	42.98	.01	40.51	.01	57.08	.08	63.0	2.8
26.1	49.65	.02	42.33	.06	42.97	.03	40.50	.04	57.00	.02	60.2	3.0
36.0	49.67		42.39		43.00		40.54		56.98		57.2	

FIXED STARS, 1903.

(CONSTANTS OF STRUVE AND PETERS.)

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APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Aquilæ. (Allair.)		ϵ Draconis.		ϵ Pavonis.		β Aquilæ.		γ Sagittæ.	
	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.
	h m 19 46	° ' " + 8 36	h m 19 48	° ' " + 70 01	h m 19 49	° ' " - 73 09	h m 19 50	° ' " + 6 09	h m 19 54	° ' " + 19 13
Jan. 1.1	2.16	51.6	27.30	29.8	18.33	56.8	32.05	59.9	25.69	52.6
11.0	2.22 .06	49.9 1.7	27.17 .13	26.5 3.3	18.42 .09	53.8 3.0	32.10 .05	58.4 1.5	25.73 .04	50.5 2.1
21.0	2.31 .09	48.3 1.6	27.16 .01	23.1 3.4	18.64 .22	50.8 3.0	32.19 .09	56.9 1.5	25.81 .08	48.3 2.2
31.0	2.44 .13	46.8 1.5	27.26 .10	19.6 3.5	19.00 .36	47.8 3.0	32.31 .12	55.5 1.4	25.92 .11	46.2 2.1
Feb. 9.9	2.60 .16	45.4 1.4	27.49 .23	16.3 3.3	19.47 .47	45.0 2.8	32.47 .16	54.2 1.3	26.06 .14	44.3 1.9
	2.60 .18	45.4 1.2	27.49 .33	16.3 3.0	19.47 .57	45.0 2.7	32.47 .18	54.2 1.0	26.06 .18	44.3 1.7
19.9	2.78	44.2	27.82	13.3	20.04	42.3	32.65	53.2	26.24	42.6
Mar. 1.9	2.99	43.3 .09	28.25 .43	10.7 2.6	20.71 .67	39.8 2.5	32.85 .20	52.3 .09	26.45 .21	41.2 1.4
11.9	3.23 .24	42.7 .06	28.77 .52	8.5 2.2	21.45 .74	37.6 2.2	33.08 .23	51.8 .05	26.68 .23	40.2 1.0
21.8	3.48 .25	42.5 .2	29.36 .59	6.9 1.6	22.26 .81	35.7 1.9	33.33 .25	51.7 .01	26.93 .25	39.7 .05
31.8	3.74 .26	42.7 .2	30.00 .64	5.9 1.0	23.11 .85	34.2 1.5	33.60 .27	51.9 .02	27.20 .27	39.6 .01
	3.74 .28	42.7 .5	30.00 .67	5.9 0.3	23.11 .89	34.2 1.1	33.60 .27	51.9 .05	27.20 .28	39.6 .03
Apr. 10.8	4.02	43.2	30.67	5.6	24.00	33.1	33.87	52.4	27.48	39.9
20.8	4.31 .29	44.1 1.2	31.35 .68	5.9 0.3	24.90 .90	32.4 .07	34.16 .29	53.2 .08	27.77 .29	40.7 .08
30.7	4.60 .29	45.3 .09	32.01 .66	6.8 0.9	25.80 .90	32.1 .03	34.45 .29	54.4 1.2	28.07 .30	41.9 1.2
May 10.7	4.88 .28	46.8 1.5	32.65 .64	8.4 1.6	26.68 .88	32.2 .01	34.73 .28	55.8 1.4	28.36 .29	43.4 1.5
20.7	5.16 .28	48.5 1.7	33.23 .58	8.4 2.0	27.52 .84	32.2 .06	35.01 .28	57.5 1.7	28.64 .28	45.3 1.9
	5.16 .26	48.5 1.9	33.23 .52	10.4 2.6	27.52 .79	32.8 1.0	35.01 .26	57.5 1.8	28.64 .27	45.3 2.2
30.6	5.42	50.4	33.75	13.0	28.31	33.8	35.27	59.3	28.91	47.5
June 9.6	5.66 .24	52.4 2.0	34.19 .44	15.9 2.9	29.03 .72	35.1 1.3	35.51 .24	61.2 1.9	29.16 .25	49.8 2.3
19.6	5.87 .21	54.5 2.1	34.54 .35	19.1 3.2	29.66 .63	36.8 1.7	35.72 .21	63.2 2.0	29.37 .21	52.3 2.5
29.6	6.05 .18	56.5 2.0	34.78 .24	22.5 3.4	30.18 .52	38.8 2.0	35.91 .19	65.1 1.9	29.55 .18	54.8 2.5
July 9.5	6.19 .14	58.5 2.0	34.92 .14	26.1 3.6	30.58 .40	41.1 2.3	36.05 .14	67.0 1.9	29.69 .14	57.3 2.5
	6.19 .09	58.5 1.9	34.92 .03	26.1 3.5	30.58 .27	41.1 2.5	36.05 .10	67.0 1.7	29.69 .10	57.3 2.4
19.5	6.28	60.4	34.95	29.6	30.85	43.6	36.15	68.7	29.79	59.7
29.5	6.34 .06	62.2 1.8	34.86 .09	33.1 3.5	30.98 .13	46.2 2.6	36.21 .06	70.3 1.6	29.85 .06	62.0 2.3
Aug. 8.5	6.35 .01	63.8 1.6	34.67 .19	36.5 3.4	30.97 .01	48.8 2.6	36.23 .02	71.8 1.5	29.85 .02	64.1 2.1
18.4	6.31 .04	65.1 1.3	34.37 .30	39.6 3.1	30.97 .15	51.3 2.5	36.23 .03	73.0 1.2	29.85 .03	65.9 1.8
28.4	6.24 .07	66.3 1.2	33.98 .39	42.5 2.9	30.82 .28	53.7 2.4	36.20 .07	74.0 1.0	29.82 .08	67.6 1.7
	6.24 .11	66.3 0.9	33.98 .47	42.5 2.6	30.54 .41	53.7 2.2	36.13 .11	74.0 0.8	29.74 .12	67.6 1.4
Sept. 7.4	6.13	67.2	33.51	45.1	30.13	55.9	36.02	74.8	29.62	69.0
17.3	5.99 .14	67.8 0.6	32.97 .54	47.2 2.1	29.62 .51	57.7 1.8	35.89 .13	75.4 0.6	29.47 .15	70.0 1.0
27.3	5.83 .16	68.3 0.5	32.37 .60	48.9 1.7	29.02 .60	59.2 1.5	35.73 .16	75.7 0.3	29.30 .17	70.8 0.8
Oct. 7.3	5.65 .18	68.4 0.1	31.73 .64	50.1 1.2	28.37 .65	60.1 0.9	35.56 .17	75.7 0.1	29.11 .19	71.2 0.4
17.3	5.47 .18	68.3 0.1	31.06 .67	50.8 0.7	27.68 .69	60.6 0.5	35.38 .18	75.7 0.1	28.92 .19	71.3 0.1
	5.47 .17	68.3 0.3	31.06 .67	50.8 0.2	27.68 .68	60.6 0.1	35.38 .18	75.7 0.3	28.92 .19	71.3 0.3
27.2	5.30	68.0	30.39	51.0	27.00	60.5	35.20	75.4	28.73	71.0
Nov. 6.2	5.13 .17	67.5 0.5	29.74 .65	50.6 0.4	26.35 .65	59.9 0.6	35.04 .16	74.8 0.6	28.55 .18	70.4 0.6
16.2	4.99 .14	66.7 0.8	29.12 .62	49.6 1.0	25.77 .58	58.7 1.2	34.90 .14	74.1 0.7	28.39 .16	69.5 0.9
26.2	4.88 .11	65.6 1.1	28.56 .56	48.1 1.5	25.27 .50	57.1 1.6	34.79 .11	73.1 1.0	28.25 .14	68.3 1.2
Dec. 6.1	4.80 .08	64.4 1.2	28.06 .50	46.0 2.1	24.88 .39	55.1 2.0	34.70 .09	71.9 1.2	28.15 .10	66.8 1.5
	4.80 .05	64.4 1.4	28.06 .41	46.0 2.6	24.88 .27	55.1 2.4	34.70 .04	71.9 1.3	28.15 .06	66.8 1.8
16.1	4.75	63.0	27.65	43.4	24.61	52.7	34.66	70.6	28.09	65.0
26.1	4.74 .01	61.4 1.6	27.33 .32	40.5 2.9	24.47 .14	50.0 2.7	34.65 .01	69.2 1.4	28.06 .03	63.0 2.0
36.0	4.77 .03	59.8 1.6	27.13 .20	37.3 3.2	24.48 .01	47.1 2.9	34.68 .03	67.7 1.5	28.07 .01	60.9 2.1

FIXED STARS, 1903.

(CONSTANTS OF STRUVE AND PETERS.)

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	♐ Sagittarii.		♈ Aquilæ.		♈ Aquilæ.		♈ Cygni.		♈ Cephei (pr).	
	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.
	h m 19 56	° -27 58	h m 19 59	° + 7 00	h m 20 06	° - 1 06	h m 20 10	° +46 26	h m 20 12	° -77 25
	s	"	s	"	s	"	s	"	s	"
Jan. 1.1	40.59	42.3	23.26	23.7	17.18	26.2	33.46	63.1	5.44	26.9
11.0	40.66	41.7	23.30	22.2	17.22	27.3	33.43	60.1	5.08	23.8
21.0	40.77	41.1	23.38	20.7	17.30	28.3	33.45	57.0	4.90	20.4
31.0	40.91	40.4	23.49	19.2	17.41	29.2	33.53	53.9	4.91	17.0
Feb. 10.0	41.09	39.6	23.64	17.9	17.55	30.0	33.66	50.9	5.11	13.7
19.9	41.29	38.8	23.81	16.8	17.72	30.7	33.84	48.2	5.50	10.5
Mar. 1.9	41.53	38.0	24.01	16.0	17.92	31.1	34.07	45.8	6.06	7.7
11.9	41.79	37.1	24.23	15.5	18.14	31.3	34.34	43.8	6.76	5.2
21.8	42.07	36.1	24.48	15.3	18.38	31.2	34.64	42.4	7.60	3.3
31.8	42.37	35.1	24.74	15.5	18.64	30.8	34.97	41.5	8.53	2.0
Apr. 10.8	42.69	34.1	25.01	16.0	18.91	30.1	35.33	41.3	9.52	1.3
20.8	43.01	33.1	25.29	16.9	19.20	29.2	35.70	41.6	10.55	1.2
30.7	43.34	32.1	25.58	18.1	19.49	28.6	36.07	42.6	11.57	1.0
May 10.7	43.67	31.2	25.87	19.5	19.78	28.0	36.44	44.1	12.56	1.7
20.7	43.99	30.3	26.15	21.2	20.06	25.1	36.79	46.1	13.47	4.6
30.7	44.29	29.6	26.42	23.0	20.33	23.5	37.12	48.5	14.30	6.8
June 9.6	44.58	29.1	26.67	25.0	20.59	21.8	37.42	51.3	15.00	9.5
19.6	44.84	28.7	26.89	27.0	20.82	20.1	37.68	54.3	15.57	12.5
29.6	45.06	28.5	27.08	29.0	21.02	18.5	37.89	57.5	15.99	15.7
July 9.5	45.24	28.5	27.23	31.0	21.18	16.9	38.04	60.9	16.25	19.2
19.5	45.38	28.7	27.34	32.8	21.30	15.5	38.15	64.2	16.34	22.7
29.5	45.46	29.0	27.41	34.5	21.38	14.3	38.19	67.5	16.25	26.3
Aug. 8.5	45.50	29.5	27.43	36.0	21.41	13.2	38.17	70.7	16.00	29.8
18.4	45.49	30.1	27.41	37.3	21.40	12.3	38.10	73.6	15.60	33.1
28.4	45.42	30.7	27.34	38.4	21.35	11.6	37.97	76.3	15.04	36.2
Sept. 7.4	45.32	31.4	27.24	39.3	21.26	11.0	37.80	78.7	14.34	39.0
17.4	45.18	32.1	27.11	39.9	21.14	10.7	37.58	80.7	13.53	41.5
27.3	45.01	32.7	26.96	40.3	20.99	10.6	37.33	82.3	12.62	43.6
Oct. 7.3	44.82	33.3	26.79	40.5	20.83	10.6	37.06	83.4	11.63	45.2
17.3	44.62	33.7	26.61	40.4	20.66	10.7	36.77	84.1	10.59	46.4
27.2	44.43	34.1	26.43	40.1	20.49	11.0	36.48	84.2	9.52	47.0
Nov. 6.2	44.25	34.3	26.27	39.6	20.33	11.5	36.19	83.9	8.46	47.0
16.2	44.09	34.3	26.12	38.8	20.18	12.1	35.93	83.0	7.42	46.5
26.2	43.97	34.2	26.00	37.9	20.07	12.9	35.69	81.7	6.45	45.4
Dec. 6.1	43.88	34.0	25.91	36.7	19.98	13.7	35.48	79.8	5.56	43.7
16.1	43.83	33.7	25.86	35.4	19.93	14.7	35.32	77.6	4.78	41.6
26.1	43.83	33.3	25.84	34.0	19.91	15.7	35.21	75.0	4.14	39.0
36.1	43.87	32.8	25.86	32.5	19.93	16.8	35.14	72.1	3.66	36.0

FIXED STARS, 1903.

(CONSTANTS OF STRUVE AND PETERS.)

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APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α^3 Capricorni.		α Pavonis.		γ Cygni.		π Capricorni.		ϵ Delphini.	
	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion North.
	h m 20 12	° ' " -12 50	h m 20 17	° ' " -57 02	h m 20 18	° ' " +39 56	h m 20 21	° ' " -18 31	h m 20 28	° ' " +10 58
Jan. 1.1	39.51	38.6	56.45	45.0	43.79	59.1	45.26	42.5	33.98	33.3
11.0	39.56	39.0	56.48	42.8	43.77	56.3	45.30	42.5	34.00	31.7
21.0	39.64	39.3	56.58	40.4	43.80	53.4	45.37	42.4	34.05	30.0
31.0	39.75	39.5	56.75	38.0	43.87	50.5	45.47	42.3	34.13	28.5
Feb. 10.0	39.89	39.6	56.97	35.6	43.99	47.7	45.61	42.0	34.24	27.0
19.9	40.07	39.6	57.26	33.2	44.15	45.2	45.78	41.6	34.39	25.7
Mar. 1.9	40.27	39.4	57.59	31.0	44.35	43.0	45.98	41.1	34.56	24.7
11.9	40.49	39.0	57.96	28.8	44.59	41.2	46.21	40.4	34.76	24.0
21.9	40.74	38.5	58.38	26.8	44.87	39.8	46.45	39.6	34.99	23.7
31.8	41.00	37.7	58.83	25.1	45.17	39.0	46.72	38.7	35.24	23.7
Apr. 10.8	41.28	36.8	59.30	23.6	45.49	38.8	47.00	37.7	35.50	24.1
20.8	41.57	35.8	59.79	22.4	45.83	39.2	47.30	36.5	35.78	24.9
30.7	41.87	34.6	60.29	21.5	46.17	40.1	47.61	35.3	36.07	26.0
May 10.7	42.17	33.3	60.79	20.9	46.51	41.6	47.92	34.1	36.36	27.5
20.7	42.47	32.0	61.29	20.7	46.85	43.5	48.22	32.9	36.65	29.2
30.7	42.75	30.7	61.76	20.8	47.16	45.9	48.52	31.7	36.93	31.1
June 9.6	43.02	29.5	62.21	21.2	47.45	48.5	48.80	30.6	37.20	33.2
19.6	43.27	28.3	62.61	22.0	47.70	51.5	49.06	29.6	37.44	35.4
29.6	43.48	27.2	62.97	23.2	47.91	54.6	49.29	28.8	37.65	37.6
July 9.6	43.66	26.3	63.26	24.6	48.08	57.8	49.48	28.2	37.83	39.7
19.5	43.80	25.5	63.46	26.2	48.19	61.0	49.63	27.7	37.96	41.8
29.5	43.89	24.9	63.63	28.1	48.25	64.1	49.74	27.4	38.05	43.8
Aug. 8.5	43.94	24.5	63.70	30.1	48.26	67.1	49.79	27.3	38.10	45.6
18.4	43.94	24.2	63.69	32.1	48.21	69.9	49.80	27.4	38.10	47.2
28.4	43.89	24.1	63.60	34.2	48.12	72.4	49.77	27.6	38.06	48.6
Sept. 7.4	43.81	24.2	63.44	36.1	47.98	74.7	49.69	27.9	37.98	49.7
17.4	43.69	24.3	63.22	37.8	47.80	76.6	49.58	28.3	37.87	50.6
27.3	43.54	24.5	62.95	39.3	47.59	78.1	49.43	28.7	37.73	51.2
Oct. 7.3	43.38	24.8	62.64	40.5	47.35	79.2	49.27	29.2	37.57	51.6
17.3	43.21	25.2	62.30	41.4	47.10	79.8	49.09	29.7	37.40	51.7
27.3	43.03	25.6	61.96	41.8	46.85	80.0	48.92	30.1	37.22	51.5
Nov. 6.2	42.87	26.0	61.64	41.8	46.60	79.7	48.75	30.5	37.05	51.1
16.2	42.73	26.4	61.34	41.3	46.37	78.9	48.60	30.9	36.90	50.4
26.2	42.61	26.8	61.08	40.5	46.17	77.6	48.47	31.2	36.77	49.5
Dec. 6.1	42.52	27.3	60.87	39.2	45.99	75.9	48.37	31.4	36.66	48.4
16.1	42.46	27.7	60.72	37.7	45.85	73.8	48.31	31.6	36.58	47.0
26.1	42.45	28.1	60.64	35.8	45.75	71.4	48.29	31.7	36.53	45.5
36.1	42.47	28.5	60.63	33.7	45.70	68.7	48.30	31.7	36.52	43.9

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	Groombridge 3241.		α Delphini.		β Pavonis.		α Cygni.		ψ Capricorni.	
	Right Ascension.	Declina- tion North	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion South.
	h m 20 30	° +72 12	h m 20 35	° +15 34	h m 20 36	° -66 32	h m 20 38	° +44 55	h m 20 40	° -25 36
Jan. 1.1	23.03	28.7	7.23	21.5	10.28	68.2	6.50	75.6	20.25	67.2
11.1	22.75	25.7	7.23	19.6	10.25	65.6	6.44	72.8	20.27	66.8
21.0	22.60	22.4	7.27	17.8	10.31	62.8	6.43	69.8	20.32	66.3
31.0	22.58	19.0	7.34	16.0	10.47	59.9	6.47	66.8	20.41	65.6
Feb. 10.0	22.70	15.6	7.44	14.3	10.71	57.0	6.57	63.9	20.54	64.8
19.9	22.94	12.4	7.58	12.8	11.03	54.1	6.71	61.1	20.70	64.0
Mar. 1.9	23.30	9.4	7.75	11.5	11.43	51.4	6.90	58.7	20.89	63.0
11.9	23.78	6.9	7.95	10.6	11.89	48.8	7.13	56.6	21.11	61.9
21.9	24.35	4.8	8.17	10.1	12.41	46.4	7.41	55.0	21.35	60.7
31.8	25.00	3.3	8.42	9.9	12.98	44.3	7.72	54.0	21.62	59.5
Apr. 10.8	25.71	2.4	8.69	10.2	13.59	42.5	8.05	53.5	21.91	58.2
20.8	26.45	2.1	8.97	10.9	14.22	41.1	8.40	53.6	22.21	56.9
30.8	27.20	2.5	9.26	12.0	14.88	40.0	8.77	54.3	22.53	55.6
May 10.7	27.94	3.5	9.56	13.4	15.54	39.3	9.14	55.6	22.86	54.3
20.7	28.65	5.1	9.85	15.2	16.20	39.1	9.50	57.4	23.18	53.1
30.7	29.29	7.2	10.14	17.2	16.83	39.2	9.84	59.6	23.50	52.0
June 9.6	29.87	9.8	10.41	19.4	17.43	39.8	10.16	62.2	23.80	51.1
19.6	30.35	12.7	10.65	21.7	17.98	40.8	10.44	65.1	24.08	50.3
29.6	30.73	16.0	10.87	24.0	18.46	42.2	10.68	68.2	24.34	49.8
July 9.6	31.00	19.4	11.05	26.4	18.86	43.9	10.88	71.5	24.56	49.4
19.5	31.15	23.0	11.19	28.7	19.18	45.9	11.02	74.8	24.73	49.3
29.5	31.18	26.6	11.28	30.9	19.40	48.1	11.10	78.1	24.86	49.4
Aug. 8.5	31.08	30.1	11.33	33.0	19.51	50.5	11.12	81.3	24.94	49.7
18.5	30.87	33.6	11.34	34.8	19.52	52.9	11.09	84.3	24.97	50.1
28.4	30.54	36.8	11.30	36.4	19.42	55.3	11.00	87.2	24.95	50.7
Sept. 7.4	30.12	39.8	11.22	37.8	19.23	57.6	10.87	89.7	24.88	51.4
17.4	29.60	42.5	11.11	38.9	18.94	59.8	10.69	91.9	24.78	52.2
27.3	29.00	44.8	10.97	39.8	18.58	61.6	10.47	93.7	24.64	52.9
Oct. 7.3	28.34	46.6	10.81	40.3	18.16	63.1	10.22	95.1	24.47	53.7
17.3	27.64	47.9	10.63	40.5	17.70	64.2	9.96	96.1	24.29	54.3
27.3	26.91	48.7	10.45	40.4	17.22	64.8	9.69	96.5	24.11	54.9
Nov. 6.2	26.18	49.0	10.28	40.1	16.74	64.8	9.42	96.5	23.93	55.4
16.2	25.46	48.7	10.12	39.4	16.30	64.4	9.16	95.9	23.77	55.7
26.2	24.78	47.8	9.98	38.5	15.89	63.5	8.92	94.9	23.63	55.9
Dec. 6.2	24.15	46.3	9.86	37.3	15.55	62.1	8.71	93.4	23.51	56.0
16.1	23.60	44.3	9.77	35.8	15.29	60.3	8.53	91.4	23.43	55.9
26.1	23.14	41.8	9.72	34.2	15.11	58.1	8.40	89.0	23.39	55.7
36.1	22.79	38.9	9.70	32.4	15.02	55.6	8.31	86.4	23.38	55.3

FIXED STARS, 1903.

(CONSTANTS OF STRUVE AND PETERS.)

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APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	ε Cygni.		μ Aquarii.		12 Year Cat. 1879.		ν Cygni.		61 Cygni.	
	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.
	h m 20 42	° ' " +33 36	h m 20 47	° ' " - 9 20	h m 20 51	° ' " +80 11	h m 20 53	° ' " +40 47	h m 21 02	° ' " +38 16
Jan. 1.1	16.38	37.5	24.58	45.8	55.71	39.0	32.57	51.3	32.14	34.5
11.1	16.35	35.1	24.59	46.3	55.03	36.2	32.51	48.7	32.09	32.1
21.1	16.36	32.5	24.63	46.7	54.56	33.1	32.49	45.9	32.07	29.5
31.0	16.41	29.8	24.71	47.1	54.34	29.8	32.52	43.1	32.10	26.9
Feb. 10.0	16.50	27.3	24.82	47.3	54.35	26.5	32.59	40.3	32.18	24.3
20.0	16.63	25.0	24.95	47.4	54.61	23.2	32.71	37.7	32.30	21.8
Mar. 1.9	16.80	22.9	25.12	47.3	55.11	20.1	32.88	35.3	32.46	19.6
11.9	17.01	21.2	25.31	47.0	55.83	17.3	33.08	33.3	32.66	17.8
21.9	17.25	20.0	25.53	46.4	56.73	15.0	33.33	31.7	32.90	16.3
31.9	17.52	19.2	25.77	45.7	57.79	13.2	33.61	30.7	33.18	15.4
Apr. 10.8	17.82	19.0	26.03	44.8	58.97	11.9	33.92	30.2	33.48	15.0
20.8	18.13	19.3	26.31	43.6	60.23	11.2	34.25	30.2	33.81	15.1
30.8	18.45	20.2	26.60	42.3	61.52	11.2	34.60	30.9	34.16	15.8
May 10.7	18.78	21.5	26.90	40.9	62.81	11.8	34.95	32.0	34.51	17.0
20.7	19.10	23.3	27.20	39.4	64.04	13.0	35.30	33.7	34.86	18.7
30.7	19.41	25.5	27.49	37.9	65.19	14.8	35.64	35.8	35.20	20.8
June 9.7	19.71	28.0	27.78	36.4	66.21	17.0	35.96	38.3	35.53	23.3
19.6	19.97	30.7	28.04	34.9	67.09	19.6	36.24	41.1	35.83	26.1
29.6	20.20	33.6	28.27	33.5	67.79	22.6	36.49	44.1	36.09	29.2
July 9.6	20.39	36.6	28.48	32.3	68.31	25.9	36.70	47.2	36.31	32.3
19.6	20.53	39.6	28.64	31.2	68.62	29.4	36.85	50.4	36.49	35.6
29.5	20.63	42.6	28.76	30.3	68.72	33.0	36.96	53.6	36.61	38.8
Aug. 8.5	20.67	45.5	28.84	29.6	68.61	36.6	37.01	56.8	36.69	41.9
18.5	20.67	48.2	28.87	29.1	68.29	40.1	37.01	59.7	36.71	44.9
28.5	20.61	50.6	28.86	28.8	67.78	43.5	36.95	62.5	36.68	47.7
Sept. 7.4	20.51	52.8	28.80	28.7	67.08	46.7	36.85	65.0	36.60	50.3
17.4	20.38	54.7	28.71	28.7	66.21	49.7	36.70	67.2	36.48	52.5
27.4	20.21	56.2	28.59	28.8	65.19	52.3	36.51	69.0	36.32	54.4
Oct. 7.3	20.01	57.3	28.45	29.1	64.04	54.5	36.30	70.4	36.14	56.0
17.3	19.80	58.1	28.29	29.4	62.80	56.2	36.07	71.4	35.93	57.1
27.3	19.58	58.4	28.12	29.9	61.49	57.5	35.83	72.0	35.72	57.7
Nov. 6.3	19.37	58.2	27.96	30.4	60.14	58.2	35.58	72.1	35.50	57.9
16.2	19.17	57.7	27.81	30.9	58.80	58.3	35.35	71.7	35.28	57.7
26.2	18.98	56.7	27.68	31.4	57.48	57.9	35.13	70.8	35.08	57.0
Dec. 6.2	18.82	55.2	27.58	32.0	56.24	56.8	34.93	69.4	34.90	55.8
16.1	18.69	53.4	27.50	32.6	55.10	55.2	34.77	67.6	34.75	54.2
26.1	18.59	51.3	27.45	33.2	54.11	53.1	34.64	65.4	34.64	52.2
36.1	18.53	48.9	27.44	33.7	53.30	50.5	34.55	63.0	34.56	50.0

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	γ Cygni.		τ Cygni.		α Cephei.		ι Pegasi.		ζ Capricorni.	
	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion South.
	h m 21 08	° ' " +29 49	h m 21 10	° ' " +37 37	h m 21 16	° ' " +62 10	h m 21 17	° ' " +19 23	h m 21 21	° ' " -22 49
Jan. 1.1	47.82	56.9	54.45	66.9	14.76	47.0	35.46	32.5	7.01	52.4
11.1	47.77	54.7	54.38	64.5	14.54	44.3	35.42	30.7	6.99	52.1
21.1	47.76	52.4	54.35	61.9	14.39	41.3	35.42	28.8	7.00	51.7
31.0	47.78	50.0	54.36	59.3	14.33	38.1	35.44	26.9	7.05	51.2
Feb. 10.0	47.84	47.6	54.41	56.6	14.34	34.9	35.50	25.1	7.13	50.5
20.0	47.94	45.4	54.51	54.1	14.43	31.7	35.60	23.4	7.24	49.7
Mar. 2.0	48.08	43.5	54.66	51.8	14.61	28.6	35.73	22.0	7.38	48.7
11.9	48.26	41.9	54.84	49.9	14.86	25.9	35.89	20.8	7.55	47.6
21.9	48.47	40.6	55.06	48.4	15.19	23.6	36.08	20.0	7.76	46.3
31.9	48.71	39.8	55.32	47.3	15.58	21.8	36.30	19.6	7.99	44.9
Apr. 10.8	48.98	39.6	55.61	46.8	16.03	20.6	36.55	19.7	8.25	43.4
20.8	49.27	39.8	55.92	46.8	16.51	19.9	36.83	20.1	8.53	41.9
30.8	49.58	40.5	56.26	47.3	17.02	19.9	37.12	21.0	8.83	40.3
May 10.8	49.90	41.7	56.60	48.4	17.54	20.5	37.42	22.3	9.15	38.7
20.7	50.22	43.3	56.94	50.0	18.06	21.7	37.72	23.9	9.47	37.2
30.7	50.54	45.3	57.27	52.0	18.56	23.5	38.03	25.8	9.79	35.8
June 9.7	50.84	47.6	57.59	54.4	19.03	25.7	38.32	28.0	10.10	34.5
19.7	51.12	50.2	57.89	57.0	19.45	28.4	38.59	30.4	10.40	33.4
29.6	51.37	52.9	58.15	59.9	19.82	31.4	38.84	32.8	10.68	32.5
July 9.6	51.58	55.8	58.37	63.0	20.12	34.7	39.06	35.3	10.92	31.8
19.6	51.75	58.7	58.55	66.1	20.35	38.1	39.24	37.8	11.13	31.3
29.5	51.88	61.5	58.68	69.2	20.50	41.7	39.37	40.3	11.29	31.1
Aug. 8.5	51.95	64.3	58.75	72.3	20.57	45.3	39.46	42.6	11.41	31.1
18.5	51.98	66.9	58.77	75.2	20.55	48.9	39.51	44.8	11.48	31.4
28.5	51.96	69.3	58.74	78.0	20.46	52.3	39.51	46.7	11.50	31.8
Sept. 7.4	51.90	71.4	58.67	80.5	20.29	55.5	39.47	48.4	11.48	32.4
17.4	51.79	73.3	58.55	82.7	20.06	58.5	39.38	49.8	11.41	33.1
27.4	51.65	74.8	58.39	84.5	19.76	61.1	39.27	51.0	11.30	33.9
Oct. 7.4	51.49	76.0	58.21	86.0	19.42	63.3	39.13	51.8	11.17	34.7
17.3	51.30	76.8	58.00	87.1	19.03	65.1	38.97	52.4	11.02	35.5
27.3	51.11	77.3	57.78	87.8	18.62	66.3	38.80	52.6	10.85	36.3
Nov. 6.3	50.91	77.3	57.56	88.0	18.19	67.1	38.63	52.5	10.68	37.0
16.2	50.72	76.9	57.34	87.7	17.76	67.3	38.47	52.1	10.52	37.5
26.2	50.54	76.2	57.14	87.0	17.33	66.9	38.31	51.4	10.37	37.9
Dec. 6.2	50.38	75.0	56.95	85.8	16.93	65.9	38.17	50.4	10.24	38.2
16.2	50.25	73.4	56.79	84.2	16.57	64.4	38.06	49.1	10.14	38.4
26.1	50.14	71.6	56.66	82.3	16.26	62.4	37.97	47.5	10.06	38.4
36.1	50.07	69.5	56.56	80.0	16.00	59.9	37.91	45.8	10.02	38.3

FIXED STARS, 1903.

(CONSTANTS OF STRUVE AND PETERS.)

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APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	β Aquarii.		β Cephei (<i>pr.</i>).		ξ Aquarii.		74 Cygni.		λ^1 Octantis.	
	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion South.
	h m 21 26	° ' 59	h m 21 27	° ' 70 07	h m 21 32	° ' 8 16	h m 21 33	° ' 39 58	h m 21 35	° ' 83 09
	s	"	s	"	s	"	s	"	s	"
Jan. 1.1	26.57	48.3	23.19	85.6	34.71	77.6	3.11	54.9	54.35	61.5
11.1	26.54	48.9	22.83	83.0	34.68	78.1	3.01	52.6	53.56	58.6
21.1	26.54	49.4	22.56	80.1	34.68	78.5	2.95	50.1	53.06	55.3
31.0	26.58	49.9	22.40	77.0	34.71	78.8	2.93	47.4	52.87	51.8
Feb. 10.0	26.64	50.3	22.35	73.7	34.77	79.0	2.96	44.7	52.99	48.2
20.0	26.74	50.5	22.42	70.4	34.86	79.1	3.03	42.1	53.40	44.6
Mar. 2.0	26.86	50.5	22.61	67.2	34.98	78.9	3.14	39.7	54.10	41.0
11.9	27.02	50.2	22.91	64.3	35.13	78.5	3.30	37.6	55.07	37.6
21.9	27.20	49.8	23.31	61.7	35.31	78.0	3.51	35.9	56.28	34.4
31.9	27.41	49.1	23.81	59.7	35.52	77.2	3.75	34.6	57.70	31.4
Apr. 10.9	27.65	48.2	24.38	58.2	35.76	76.2	4.04	33.8	59.31	28.8
20.8	27.91	47.0	25.01	57.2	36.02	75.0	4.35	33.6	61.07	26.6
30.8	28.19	45.7	25.68	56.9	36.30	73.5	4.68	33.9	62.94	24.9
May 10.8	28.48	44.2	26.37	57.2	36.59	72.0	5.03	34.7	64.89	23.6
20.7	28.78	42.5	27.05	58.2	36.89	70.3	5.38	36.1	66.87	22.8
30.7	29.08	40.8	27.71	59.7	37.19	68.6	5.73	37.9	68.84	22.5
June 9.7	29.38	39.1	28.33	61.7	37.49	66.9	6.07	40.1	70.75	22.8
19.7	29.66	37.4	28.89	64.2	37.78	65.3	6.39	42.7	72.56	23.6
29.6	29.92	35.7	29.38	67.1	38.04	63.7	6.67	45.5	74.23	24.8
July 9.6	30.15	34.2	29.78	70.3	38.27	62.3	6.92	48.5	75.70	26.5
19.6	30.34	32.9	30.08	73.7	38.47	61.0	7.12	51.6	76.94	28.6
29.6	30.50	31.7	30.28	77.3	38.64	60.0	7.28	54.8	77.90	31.1
Aug. 8.5	30.61	30.7	30.37	80.9	38.76	59.1	7.38	57.9	78.56	33.8
18.5	30.67	29.9	30.36	84.6	38.83	58.5	7.43	61.0	78.89	36.7
28.5	30.70	29.4	30.24	88.1	38.86	58.0	7.42	63.9	78.89	39.7
Sept. 7.4	30.68	29.0	30.02	91.5	38.84	57.8	7.37	66.5	78.55	42.7
17.4	30.62	28.9	29.70	94.7	38.79	57.8	7.27	68.9	77.89	45.5
27.4	30.52	28.9	29.30	97.6	38.70	57.9	7.13	71.0	76.92	48.1
Oct. 7.4	30.41	29.1	28.83	100.1	38.59	58.2	6.96	72.7	75.68	50.3
17.3	30.27	29.4	28.30	102.1	38.45	58.6	6.76	74.1	74.23	52.1
27.3	30.12	29.8	27.72	103.7	38.31	59.1	6.55	75.0	72.62	53.4
Nov. 6.3	29.96	30.3	27.12	104.8	38.16	59.6	6.32	75.4	70.91	54.1
16.3	29.82	30.9	26.50	105.3	38.01	60.2	6.10	75.4	69.18	54.1
26.2	29.68	31.5	25.89	105.2	37.87	60.8	5.88	74.9	67.48	53.6
Dec. 6.2	29.56	32.1	25.30	104.5	37.75	61.4	5.68	74.0	65.89	52.4
16.2	29.46	32.8	24.75	103.2	37.65	62.1	5.50	72.6	64.46	50.7
26.1	29.39	33.5	24.25	101.4	37.57	62.7	5.34	70.8	63.25	48.4
36.1	29.35	34.2	23.83	99.1	37.52	63.2	5.22	68.7	62.29	45.7

FIXED STARS, 1903.

(CONSTANTS OF STRUVE AND PETERS.)

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	ε Pegasi.		η Cephei.		π Cygni.		μ Capricorni.		ι Pegasi.	
	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion North.
	h m	°	h m	°	h m	°	h m	°	h m	°
	21 39	+ 9 25	21 40	+70 51	21 43	+48 51	21 47	-14 00	21 48	+25 28
Jan. 1.1	24.82	56.7	28.83	73.7	12.00	55.7	59.88	28.8	38.49	19.6
11.1	24.78 ^{.04}	55.4 ^{1.3}	28.42 ^{.41}	71.2 ^{2.5}	11.85 ^{.15}	53.4 ^{2.3}	59.84 ^{.04}	29.0 ^{0.2}	38.42 ^{.07}	17.8 ^{1.8}
21.1	24.76 ^{.02}	54.1 ^{1.3}	28.11 ^{.31}	68.4 ^{2.8}	11.75 ^{.10}	50.7 ^{2.7}	59.83 ^{.01}	29.1 ^{0.1}	38.37 ^{.05}	15.8 ^{2.0}
31.1	24.78 ^{.02}	52.8 ^{1.3}	27.91 ^{.20}	65.3 ^{3.1}	11.70 ^{.05}	47.8 ^{2.9}	59.84 ^{.01}	29.1 ^{0.0}	38.36 ^{.01}	13.7 ^{2.1}
Feb. 10.0	24.82 ^{.04}	51.5 ^{1.3}	27.82 ^{.09}	62.1 ^{3.2}	11.69 ^{.01}	44.9 ^{2.9}	59.89 ^{.05}	28.9 ^{0.2}	38.38 ^{.02}	11.6 ^{2.1}
	24.82 ^{.07}	51.5 ^{1.1}	27.82 ^{.03}	62.1 ^{3.3}	11.69 ^{.05}	44.9 ^{2.9}	59.89 ^{.08}	28.9 ^{0.3}	38.38 ^{.06}	11.6 ^{1.9}
20.0	24.89	50.4	27.85	58.8	11.74	42.0	59.97	28.6	38.44	9.7
Mar. 2.0	25.00 ^{.11}	49.5 ^{0.9}	28.01 ^{.16}	55.6 ^{3.2}	11.85 ^{.11}	39.3 ^{2.7}	60.07 ^{.10}	28.1 ^{0.5}	38.54 ^{.10}	7.9 ^{1.8}
11.9	25.14 ^{.17}	48.9 ^{0.6}	28.28 ^{.27}	52.6 ^{3.0}	12.01 ^{.16}	36.8 ^{2.5}	60.21 ^{.14}	27.4 ^{0.7}	38.67 ^{.13}	6.4 ^{1.5}
21.9	25.31 ^{.20}	48.5 ^{0.4}	28.67 ^{.39}	50.0 ^{2.6}	12.23 ^{.22}	34.7 ^{2.1}	60.38 ^{.17}	26.5 ^{0.9}	38.84 ^{.17}	5.3 ^{1.1}
31.9	25.51 ^{.23}	48.5 ^{0.0}	29.15 ^{.48}	47.8 ^{2.2}	12.50 ^{.27}	33.1 ^{1.6}	60.58 ^{.20}	25.4 ^{1.1}	39.05 ^{.21}	4.5 ^{0.8}
	25.51 ^{.23}	48.5 ^{0.4}	29.15 ^{.57}	47.8 ^{1.7}	12.50 ^{.31}	33.1 ^{1.2}	60.58 ^{.23}	25.4 ^{1.3}	39.05 ^{.24}	4.5 ^{0.3}
Apr. 10.9	25.74	48.9	29.72	46.1	12.81	31.9	60.81	24.1	39.29	4.2
20.8	26.00 ^{.26}	49.6 ^{0.7}	30.36 ^{.64}	45.0 ^{1.1}	13.15 ^{.34}	31.3 ^{0.6}	61.07 ^{.26}	22.6 ^{1.5}	39.55 ^{.26}	4.3 ^{0.1}
30.8	26.27 ^{.27}	50.6 ^{1.0}	31.04 ^{.68}	44.5 ^{0.5}	13.52 ^{.37}	31.3 ^{0.0}	61.34 ^{.27}	21.1 ^{1.5}	39.84 ^{.29}	4.9 ^{0.6}
May 10.8	26.56 ^{.29}	52.0 ^{1.4}	31.75 ^{.71}	44.7 ^{0.2}	13.91 ^{.39}	31.9 ^{0.6}	61.64 ^{.30}	19.4 ^{1.7}	40.14 ^{.30}	5.9 ^{1.0}
20.7	26.86 ^{.30}	53.6 ^{1.6}	32.46 ^{.70}	45.4 ^{0.7}	14.31 ^{.40}	33.0 ^{1.1}	61.95 ^{.31}	17.7 ^{1.7}	40.46 ^{.32}	7.3 ^{1.4}
	26.86 ^{.30}	53.6 ^{1.8}	32.46 ^{.70}	45.4 ^{1.3}	14.31 ^{.40}	33.0 ^{1.7}	61.95 ^{.31}	17.7 ^{1.7}	40.46 ^{.32}	7.3 ^{1.8}
30.7	27.16	55.4	33.16	46.7	14.71	34.7	62.26	16.0	40.78	9.1
June 9.7	27.45 ^{.29}	57.4 ^{2.0}	33.81 ^{.65}	48.6 ^{1.9}	15.09 ^{.38}	36.8 ^{2.1}	62.56 ^{.30}	14.4 ^{1.6}	41.09 ^{.31}	11.2 ^{2.1}
19.7	27.73 ^{.28}	59.5 ^{2.1}	34.41 ^{.60}	51.0 ^{2.4}	15.45 ^{.36}	39.3 ^{2.5}	62.86 ^{.30}	12.8 ^{1.6}	41.39 ^{.30}	13.6 ^{2.4}
29.6	27.99 ^{.26}	61.7 ^{2.2}	34.94 ^{.53}	53.7 ^{2.7}	15.77 ^{.32}	42.1 ^{2.8}	63.14 ^{.28}	11.4 ^{1.4}	41.66 ^{.27}	16.1 ^{2.5}
July 9.6	28.22 ^{.23}	63.9 ^{2.2}	35.39 ^{.45}	56.8 ^{3.1}	16.05 ^{.28}	45.2 ^{3.1}	63.39 ^{.25}	10.2 ^{1.2}	41.90 ^{.24}	18.8 ^{2.7}
	28.22 ^{.20}	63.9 ^{2.1}	35.39 ^{.34}	56.8 ^{3.4}	16.05 ^{.23}	45.2 ^{3.2}	63.39 ^{.22}	10.2 ^{1.0}	41.90 ^{.21}	18.8 ^{2.7}
19.6	28.42	66.0	35.73	60.2	16.28	48.4	63.61	9.2	42.11	21.5
29.6	28.58 ^{.16}	68.0 ^{2.0}	35.97 ^{.24}	63.8 ^{3.6}	16.46 ^{.18}	51.8 ^{3.4}	63.79 ^{.18}	8.4 ^{0.8}	42.28 ^{.17}	24.2 ^{2.7}
Aug. 8.5	28.70 ^{.12}	69.8 ^{1.8}	36.11 ^{.14}	67.4 ^{3.6}	16.57 ^{.11}	55.2 ^{3.4}	63.92 ^{.13}	7.8 ^{0.6}	42.40 ^{.12}	26.8 ^{2.6}
18.5	28.77 ^{.07}	71.5 ^{1.7}	36.13 ^{.02}	71.1 ^{3.7}	16.63 ^{.06}	58.5 ^{3.3}	64.02 ^{.10}	7.5 ^{0.3}	42.47 ^{.07}	29.3 ^{2.5}
28.5	28.80 ^{.03}	72.9 ^{1.4}	36.05 ^{.08}	74.7 ^{3.6}	16.63 ^{.00}	61.7 ^{3.2}	64.06 ^{.04}	7.4 ^{0.1}	42.50 ^{.03}	31.6 ^{2.3}
	28.80 ^{.02}	72.9 ^{1.3}	36.05 ^{.20}	74.7 ^{3.5}	16.63 ^{.06}	61.7 ^{3.0}	64.06 ^{.01}	7.4 ^{0.1}	42.50 ^{.01}	31.6 ^{2.1}
Sept. 7.5	28.78	74.2	35.85	78.2	16.57	64.7	64.07	7.5	42.49	33.7
17.4	28.73 ^{.05}	75.2 ^{1.0}	35.56 ^{.29}	81.5 ^{3.3}	16.46 ^{.11}	67.5 ^{2.8}	64.03 ^{.04}	7.7 ^{0.2}	42.43 ^{.06}	35.5 ^{1.8}
27.4	28.65 ^{.08}	75.9 ^{0.7}	35.18 ^{.38}	84.5 ^{3.0}	16.30 ^{.16}	70.0 ^{2.5}	63.95 ^{.08}	8.2 ^{0.5}	42.34 ^{.09}	37.1 ^{1.6}
Oct. 7.4	28.53 ^{.12}	76.4 ^{0.5}	34.73 ^{.45}	87.1 ^{2.6}	16.10 ^{.20}	72.1 ^{2.1}	63.84 ^{.11}	8.7 ^{0.5}	42.21 ^{.13}	38.3 ^{1.2}
17.3	28.40 ^{.13}	76.7 ^{0.3}	34.20 ^{.33}	89.4 ^{2.3}	15.87 ^{.23}	73.8 ^{1.7}	63.71 ^{.13}	9.3 ^{0.6}	42.07 ^{.14}	39.2 ^{0.9}
	28.40 ^{.15}	76.7 ^{0.0}	34.20 ^{.57}	89.4 ^{1.8}	15.87 ^{.25}	73.8 ^{1.3}	63.71 ^{.14}	9.3 ^{0.7}	42.07 ^{.17}	39.2 ^{0.6}
27.3	28.25	76.7	33.63	91.2	15.62	75.1	63.57	10.0	41.90	39.8
Nov. 6.3	28.10 ^{.15}	76.5 ^{0.2}	33.01 ^{.62}	92.4 ^{1.2}	15.35 ^{.27}	75.8 ^{0.7}	63.42 ^{.15}	10.6 ^{0.6}	41.73 ^{.17}	40.0 ^{0.2}
16.3	27.95 ^{.15}	76.1 ^{0.4}	32.38 ^{.63}	93.1 ^{0.7}	15.08 ^{.27}	76.1 ^{0.3}	63.27 ^{.15}	11.3 ^{0.7}	41.56 ^{.17}	39.9 ^{0.1}
26.2	27.80 ^{.15}	75.4 ^{0.7}	31.75 ^{.63}	93.2 ^{0.1}	14.81 ^{.27}	75.9 ^{0.2}	63.13 ^{.14}	11.9 ^{0.6}	41.39 ^{.17}	39.4 ^{0.5}
Dec. 6.2	27.67 ^{.13}	74.6 ^{0.8}	31.13 ^{.62}	92.7 ^{0.5}	14.55 ^{.26}	75.1 ^{0.8}	63.00 ^{.13}	12.5 ^{0.6}	41.24 ^{.15}	38.6 ^{0.8}
	27.67 ^{.11}	74.6 ^{1.0}	31.13 ^{.58}	92.7 ^{1.0}	14.55 ^{.23}	75.1 ^{1.3}	63.00 ^{.11}	12.5 ^{0.5}	41.24 ^{.14}	38.6 ^{1.2}
16.2	27.56	73.6	30.55	91.7	14.32	73.8	62.89	13.0	41.10	37.4
26.2	27.48 ^{.08}	72.4 ^{1.2}	30.02 ^{.53}	90.0 ^{1.7}	14.11 ^{.21}	72.1 ^{1.7}	62.81 ^{.08}	13.4 ^{0.4}	40.98 ^{.12}	35.9 ^{1.5}
36.1	27.42 ^{.06}	71.1 ^{1.3}	29.56 ^{.46}	87.8 ^{2.2}	13.94 ^{.17}	69.9 ^{2.2}	62.75 ^{.06}	13.7 ^{0.3}	40.89 ^{.09}	34.2 ^{1.7}

FIXED STARS, 1903.

(CONSTANTS OF STRUVE AND PETERS.)

395

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	79 Draconis.		α Aquarii.		α Gruis.		π Pegasi.		θ Aquarii.	
	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion South.
	h m 21 51	° ' " +73 14	h m 22 00	° ' " - 0 47	h m 22 02	° ' " -47 25	h m 22 05	° ' " +32 42	h m 22 11	° ' " - 8 15
Jan. 1.1	37.84	57.3	47.70	23.1	6.01	57.4	40.44	21.7	42.48	56.1
11.1	37.34	55.0	47.64	23.9	5.91	56.0	40.34	19.8	42.42	56.6
21.1	36.95	52.3	47.62	24.7	5.85	54.3	40.26	17.7	42.39	57.0
31.1	36.67	49.3	47.61	25.4	5.83	52.4	40.22	15.4	42.38	57.3
Feb. 10.0	36.52	46.1	47.64	26.0	5.86	50.2	40.22	13.1	42.40	57.5
20.0	36.51	42.8	47.70	26.5	5.94	47.9	40.25	10.9	42.45	57.5
Mar. 2.0	36.64	39.5	47.79	26.7	6.06	45.5	40.33	8.8	42.53	57.2
12.0	36.91	36.5	47.91	26.8	6.23	42.9	40.45	6.9	42.64	56.8
21.9	37.31	33.8	48.06	26.6	6.44	40.4	40.61	5.4	42.79	56.2
31.9	37.83	31.4	48.24	26.1	6.69	37.9	40.81	4.2	42.96	55.3
Apr. 10.9	38.44	29.6	48.46	25.3	6.99	35.4	41.04	3.5	43.17	54.2
20.8	39.14	28.3	48.70	24.3	7.32	33.1	41.31	3.3	43.41	52.9
30.8	39.90	27.6	48.96	23.0	7.68	30.9	41.61	3.5	43.67	51.4
May 10.8	40.69	27.6	49.24	21.5	8.06	29.0	41.93	4.3	43.95	49.8
20.7	41.49	28.2	49.54	19.8	8.47	27.3	42.26	5.5	44.25	48.0
30.7	42.28	29.3	49.84	18.0	8.88	26.0	42.60	7.1	44.55	46.2
June 9.7	43.03	31.0	50.14	16.2	9.29	25.0	42.93	9.1	44.85	44.4
19.7	43.72	33.2	50.43	14.2	9.70	24.4	43.24	11.4	45.15	42.6
29.6	44.33	35.8	50.70	12.4	10.08	24.1	43.54	14.0	45.44	40.9
July 9.6	44.85	38.8	50.95	10.6	10.42	24.3	43.80	16.8	45.70	39.4
19.6	45.27	42.1	51.17	8.9	10.73	24.8	44.03	19.6	45.93	38.0
29.6	45.56	45.6	51.35	7.4	10.99	25.7	44.22	22.5	46.12	36.9
Aug. 8.5	45.74	49.3	51.49	6.0	11.19	27.0	44.36	25.4	46.28	35.9
18.5	45.80	53.0	51.59	4.9	11.33	28.5	44.45	28.2	46.39	35.2
28.5	45.73	56.6	51.64	4.0	11.41	30.2	44.50	30.9	46.46	34.7
Sept. 7.5	45.54	60.2	51.65	3.3	11.42	32.1	44.50	33.4	46.48	34.5
17.4	45.24	63.6	51.62	2.8	11.37	34.1	44.45	35.6	46.46	34.4
27.4	44.84	66.7	51.56	2.6	11.26	36.1	44.36	37.6	46.41	34.6
Oct. 7.4	44.34	69.5	51.47	2.5	11.11	38.0	44.24	39.2	46.32	34.9
17.4	43.77	71.9	51.35	2.6	10.92	39.7	44.09	40.5	46.21	35.3
27.3	43.13	73.9	51.22	2.9	10.70	41.1	43.93	41.5	46.08	35.8
Nov. 6.3	42.44	75.3	51.08	3.3	10.46	42.3	43.75	42.0	45.94	36.5
16.3	41.73	76.2	50.94	3.9	10.22	43.1	43.56	42.2	45.80	37.1
26.2	41.00	76.5	50.80	4.5	9.98	43.5	43.38	41.9	45.67	37.8
Dec. 6.2	40.28	76.3	50.67	5.2	9.77	43.6	43.20	41.2	45.54	38.5
16.2	39.60	75.4	50.56	6.0	9.57	43.2	43.04	40.1	45.43	39.1
26.2	38.96	74.0	50.47	6.8	9.41	42.4	42.89	38.7	45.33	39.7
36.1	38.40	71.9	50.40	7.7	9.28	41.3	42.77	36.9	45.26	40.3

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	ν Octantis.		γ Aquarii.		π Aquarii.		σ Aquarii.		α Lacertæ.	
	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion North.
	h m 22 12	° ' " -86 27	h m 22 16	° ' " - 1 52	h m 22 20	° ' " + 0 53	h m 22 25	° ' " -11 10	h m 22 27	° ' " +49 46
	s	"	s	"	s	"	s	"	s	"
Jan. 1.2	53.22	49.7 2.8	38.41	29.7 0.8	19.06	11.2 0.9	30.47	26.4 0.3	17.52	79.4 1.0
11.1	51.08 2.14	46.9 3.1	38.35	30.5 0.7	18.99 0.07	10.3 0.8	30.40 0.07	26.7 0.3	17.33 0.19	77.5 2.4
21.1	49.45 1.63	43.8 3.5	38.31 0.04	31.2 0.7	18.94 0.05	9.5 0.8	30.36 0.04	27.0 0.3	17.18 0.15	75.1 2.4
31.1	48.38 1.07	40.3 3.6	38.29 0.02	31.9 0.7	18.92 0.02	8.7 0.8	30.34 0.02	27.1 0.1	17.07 0.11	72.5 2.6
Feb. 10.0	47.89 0.49	36.7 3.8	38.31 0.02	32.4 0.5	18.93 0.01	8.0 0.7	30.34 0.00	27.1 0.0	17.00 0.07	69.8 2.7
	0.08		0.04	0.3	0.04	0.5	0.04	0.2	0.01	2.8
20.0	47.97 0.64	32.9 3.7	38.35 0.07	32.7 0.2	18.97 0.07	7.5 0.3	30.38 0.06	26.9 0.4	16.99 0.04	67.0 2.8
Mar. 2.0	48.61 1.19	29.2 3.7	38.42 0.10	32.9 0.0	19.04 0.10	7.2 0.2	30.44 0.10	26.5 0.7	17.03 0.10	64.2 2.6
12.0	49.80 1.70	25.5 3.5	38.52 0.14	32.9 0.3	19.14 0.13	7.0 0.2	30.54 0.13	25.8 0.8	17.13 0.16	61.6 2.3
21.9	51.50 2.15	22.0 3.3	38.66 0.17	32.6 0.6	19.27 0.16	7.2 0.4	30.67 0.17	25.0 1.1	17.29 0.22	59.3 2.0
31.9	53.65 2.57	18.7 3.0	38.83 0.20	32.0 0.8	19.43 0.20	7.6 0.7	30.84 0.20	23.9 1.2	17.51 0.27	57.3 1.5
Apr. 10.9	56.22 2.91	15.7 2.6	39.03 0.23	31.2 1.0	19.63 0.23	8.3 0.9	31.04 0.22	22.7 1.4	17.78 0.31	55.8 1.0
20.9	59.13 3.21	13.1 2.3	39.26 0.26	30.2 1.4	19.86 0.26	9.2 1.2	31.26 0.26	21.3 1.6	18.09 0.36	54.8 0.4
30.8	62.34 3.42	10.8 1.7	39.52 0.28	28.8 1.5	20.12 0.27	10.4 1.5	31.52 0.28	19.7 1.8	18.45 0.38	54.4 0.1
May 10.8	65.76 3.58	9.1 1.3	39.80 0.29	27.3 1.7	20.39 0.29	11.9 1.7	31.80 0.29	17.9 1.8	18.83 0.41	54.5 0.6
20.8	69.34 3.64	7.8 0.7	40.09 0.30	25.6 1.8	20.68 0.30	13.6 1.8	32.09 0.31	16.1 1.8	19.24 0.41	55.1 1.2
30.7	72.98 3.63	7.1 0.2	40.39 0.31	23.8 1.9	20.98 0.31	15.4 1.9	32.40 0.31	14.3 1.8	19.65 0.41	56.3 1.7
June 9.7	76.61 3.52	6.9 0.3	40.70 0.29	21.9 1.9	21.29 0.29	17.3 2.0	32.71 0.30	12.5 1.8	20.06 0.39	58.0 2.1
19.7	80.13 3.32	7.2 0.9	40.99 0.28	20.0 1.9	21.58 0.28	19.3 1.9	33.01 0.29	10.7 1.6	20.45 0.37	60.1 2.5
29.7	83.45 3.04	8.1 1.4	41.27 0.26	18.1 1.8	21.86 0.26	21.2 1.9	33.30 0.27	9.1 1.5	20.82 0.33	62.6 2.8
July 9.6	86.49 2.66	9.5 1.8	41.53 0.23	16.3 1.6	22.12 0.23	23.1 1.8	33.57 0.24	7.6 1.3	21.15 0.29	65.4 3.1
19.6	89.15 2.21	11.3 2.3	41.76 0.20	14.7 1.5	22.35 0.20	24.9 1.6	33.81 0.21	6.3 1.1	21.44 0.24	68.5 3.2
29.6	91.36 1.69	13.6 2.6	41.96 0.15	13.2 1.3	22.55 0.16	26.5 1.5	34.02 0.17	5.2 0.8	21.68 0.18	71.7 3.3
Aug. 8.6	93.05 1.10	16.2 2.8	42.11 0.12	11.9 1.1	22.71 0.12	28.0 1.2	34.19 0.12	4.4 0.6	21.86 0.13	75.0 3.4
18.5	94.15 0.48	19.0 3.0	42.23 0.07	10.8 0.9	22.83 0.07	29.2 1.1	34.31 0.08	3.8 0.3	21.99 0.06	78.4 3.5
28.5	94.63 0.16	22.0 3.1	42.30 0.03	9.9 0.7	22.90 0.03	30.3 0.8	34.39 0.04	3.5 0.1	22.05 0.01	81.7 3.2
Sept. 7.5	94.47 0.81	25.1 3.0	42.32 0.01	9.2 0.4	22.93 0.01	31.1 0.6	34.43 0.00	3.4 0.2	22.06 0.04	84.9 3.0
17.4	93.66 1.43	28.1 2.9	42.31 0.05	8.8 0.2	22.92 0.05	31.7 0.3	34.43 0.04	3.6 0.3	22.02 0.10	87.9 2.7
27.4	92.23 2.01	31.0 2.5	42.26 0.08	8.6 0.0	22.87 0.08	32.0 0.2	34.39 0.08	3.9 0.4	21.92 0.15	90.6 2.5
Oct. 7.4	90.22 2.51	33.5 2.2	42.18 0.11	8.6 0.2	22.79 0.10	32.2 0.1	34.31 0.10	4.3 0.6	21.77 0.18	93.1 2.1
17.4	87.71 2.92	35.7 1.7	42.07 0.12	8.8 0.3	22.69 0.12	32.1 0.2	34.21 0.12	4.9 0.7	21.59 0.21	95.2 1.7
27.3	84.79 3.21	37.4 1.2	41.95 0.13	9.1 0.5	22.57 0.14	31.9 0.4	34.09 0.13	5.6 0.7	21.38 0.23	96.9 1.3
Nov. 6.3	81.58 3.38	38.6 0.5	41.82 0.14	9.6 0.6	22.43 0.13	31.5 0.5	33.96 0.14	6.3 0.7	21.15 0.26	98.2 0.8
16.3	78.20 3.43	39.1 0.1	41.68 0.14	10.2 0.6	22.30 0.14	31.0 0.6	33.82 0.14	7.0 0.7	20.89 0.26	99.0 0.3
26.3	74.77 3.35	39.0 0.7	41.54 0.12	10.8 0.7	22.16 0.13	30.4 0.7	33.68 0.13	7.7 0.7	20.63 0.26	99.3 0.3
Dec. 6.2	71.42 3.14	38.3 1.4	41.42 0.12	11.5 0.7	22.03 0.11	29.7 0.8	33.55 0.12	8.4 0.6	20.37 0.25	99.0 0.8
16.2	68.28 2.82	36.9 1.9	41.30 0.09	12.2 0.8	21.92 0.10	28.9 0.8	33.43 0.10	9.0 0.6	20.12 0.23	98.2 1.2
26.2	65.46 2.42	35.0 2.5	41.21 0.08	13.0 0.8	21.82 0.08	28.1 0.9	33.33 0.08	9.6 0.5	19.89 0.21	97.0 1.7
36.1	63.04	32.5	41.13	13.8	21.74	27.2	33.25	10.1	19.68	95.3

FIXED STARS, 1903.

395

(CONSTANTS OF STRUVE AND PETERS.)

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	η Aquarii.		226 Cephei (B.).		10 Lacertae.		β Octantis.		ζ Pegasi.	
	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion North.
	h m 22 30	° ' " — 0 36	h m 22 30	° ' " +75 43	h m 22 34	° ' " +38 32	h m 22 35	° ' " —81 52	h m 22 36	° ' " +10 19
Jan. 1.2	22.03	58.8	33.77	57.9	54.40	58.6	62.05	96.5	37.26	37.0
11.1	21.96	59.6	33.08	56.1	54.26	56.8	61.03	94.1	37.18	35.8
21.1	21.91	60.3	32.50	53.8	54.14	54.7	60.22	91.3	37.12	34.6
31.1	21.88	61.0	32.03	51.0	54.06	52.4	59.64	88.1	37.08	33.4
Feb. 10.1	21.88	61.6	31.71	48.0	54.02	50.0	59.29	84.6	37.06	32.3
20.0	21.91	62.0	31.54	44.8	54.01	47.6	59.18	81.0	37.08	31.2
Mar. 2.0	21.97	62.3	31.53	41.6	54.05	45.3	59.31	77.3	37.13	30.3
12.0	22.06	62.3	31.69	38.4	54.14	43.1	59.68	73.6	37.21	29.6
21.9	22.18	62.1	32.01	35.4	54.27	41.2	60.28	70.0	37.33	29.2
31.9	22.34	61.6	32.48	32.7	54.45	39.7	61.09	66.5	37.48	29.1
Apr. 10.9	22.53	60.8	33.09	30.5	54.67	38.6	62.09	63.3	37.67	29.3
20.9	22.75	59.8	33.82	28.7	54.94	37.9	63.27	60.4	37.89	29.9
30.8	23.00	58.5	34.64	27.5	55.24	37.8	64.60	57.8	38.14	30.8
May 10.8	23.27	57.0	35.52	26.9	55.56	38.1	66.06	55.7	38.41	32.0
20.8	23.56	55.3	36.44	26.9	55.91	39.0	67.61	54.0	38.70	33.5
30.8	23.86	53.5	37.37	27.5	56.27	40.3	69.21	52.9	39.00	35.2
June 9.7	24.17	51.6	38.28	28.7	56.62	42.1	70.84	52.3	39.31	37.1
19.7	24.47	49.6	39.14	30.4	56.97	44.2	72.45	52.2	39.61	39.2
29.7	24.75	47.7	39.93	32.6	57.30	46.7	73.99	52.6	39.90	41.3
July 9.6	25.02	45.9	40.64	35.3	57.60	49.4	75.44	53.6	40.17	43.5
19.6	25.26	44.1	41.24	38.3	57.86	52.2	76.74	55.1	40.41	45.6
29.6	25.46	42.6	41.72	41.6	58.09	55.2	77.86	57.0	40.62	47.7
Aug. 8.6	25.63	41.2	42.07	45.0	58.26	58.3	78.76	59.4	40.79	49.6
18.5	25.75	40.0	42.28	48.7	58.39	61.3	79.41	62.0	40.91	51.4
28.5	25.83	39.0	42.36	52.5	58.47	64.2	79.80	64.9	41.00	53.0
Sept. 7.5	25.87	38.3	42.30	56.1	58.50	67.0	79.90	67.9	41.04	54.4
17.5	25.87	37.8	42.10	59.8	58.48	69.6	79.71	71.0	41.05	55.5
27.4	25.84	37.5	41.77	63.2	58.42	71.9	79.25	73.9	41.01	56.4
Oct. 7.4	25.77	37.4	41.33	66.4	58.32	74.0	78.52	76.6	40.95	57.1
17.4	25.67	37.5	40.78	69.3	58.19	75.7	77.56	79.1	40.85	57.5
27.3	25.56	37.8	40.13	71.7	58.03	77.1	76.40	81.1	40.74	57.7
Nov. 6.3	25.43	38.2	39.41	73.7	57.85	78.0	75.09	82.6	40.61	57.7
16.3	25.30	38.8	38.63	75.2	57.66	78.6	73.68	83.5	40.48	57.4
26.3	25.17	39.4	37.81	76.2	57.47	78.7	72.23	83.8	40.34	56.9
Dec. 6.2	25.04	40.1	36.97	76.5	57.27	78.3	70.79	83.5	40.21	56.3
16.2	24.92	40.9	36.14	76.3	57.08	77.5	69.41	82.6	40.09	55.4
26.2	24.82	41.7	35.34	75.4	56.91	76.3	68.14	81.0	39.98	54.4
36.2	24.73	42.5	34.60	73.9	56.75	74.7	67.03	78.9	39.88	53.3

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	λ Pegasi.		ε Cephei.		λ Aquarii.		α Piscis Australis. (Fomalhaut.)		α Andromedæ.	
	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion North.
	h m	° '	h m	° '	h m	° '	h m	° '	h m	° '
	22 41	+23 03	22 46	+65 41	22 47	- 8 05	22 52	-30 07	22 57	+41 48
	s	"	s	"	s	"	s	"	s	"
Jan. 1.2	51.39	29.6	13.56	45.7	32.99	43.6	16.95	76.3	27.49	32.8
	11.1	51.29	28.1	13.18	32.90	44.1	16.85	76.0	27.32	31.2
	21.1	51.21	26.5	12.85	32.84	44.5	16.77	75.4	27.18	29.2
	31.1	51.15	24.8	12.58	32.80	44.8	16.71	74.5	27.07	27.0
Feb. 10.1	51.12	23.0	12.39	36.3	32.78	44.9	16.69	73.4	26.99	24.6
	20.9	51.13	21.3	12.28	32.80	44.9	16.70	72.0	26.95	22.2
Mar. 2.0	51.16	19.7	12.27	30.1	32.84	44.6	16.74	70.5	26.96	19.7
	12.0	51.24	18.3	12.35	32.91	44.2	16.82	68.7	27.02	17.4
	22.0	51.36	17.1	12.53	33.02	43.5	16.93	66.8	27.13	15.3
	31.9	51.51	16.3	12.80	33.16	42.6	17.08	64.7	27.29	13.6
Apr. 10.9	51.70	15.9	13.15	19.5	33.34	41.4	17.27	62.5	27.50	12.2
	20.9	51.93	15.9	13.59	33.55	40.1	17.50	60.3	27.75	11.3
	30.8	52.19	16.3	14.09	33.79	38.5	17.76	58.1	28.05	10.8
May 10.8	52.47	17.0	14.63	16.1	34.06	36.8	18.05	55.9	28.38	10.9
	20.8	52.78	18.2	15.21	34.34	35.0	18.37	53.8	28.73	11.5
	30.8	53.09	19.8	15.80	34.64	33.1	18.70	51.8	29.10	12.6
June 9.7	53.41	21.6	16.39	18.0	34.95	31.2	19.04	50.0	29.47	14.1
	19.7	53.77	23.7	16.96	35.26	29.3	19.38	48.5	29.83	16.0
	29.7	54.03	26.0	17.50	35.55	27.5	19.71	47.3	30.18	18.3
July 9.7	54.31	28.5	17.99	24.4	35.83	25.9	20.02	46.3	30.51	20.9
	19.6	54.56	31.0	18.42	36.08	24.4	20.31	45.7	30.81	23.7
	29.6	54.77	33.5	18.78	36.30	23.1	20.56	45.0	31.06	26.6
Aug. 8.6	54.95	36.0	19.06	34.1	36.49	22.1	20.78	45.6	31.27	29.6
	18.5	55.08	38.4	19.25	36.63	21.3	20.95	46.0	31.43	32.7
	28.5	55.17	40.7	19.36	36.73	20.8	21.07	46.7	31.54	35.8
Sept. 7.5	55.21	42.8	19.39	44.9	36.79	20.5	21.14	47.8	31.60	38.7
	17.5	55.22	44.6	48.4	36.81	20.4	21.16	49.0	31.61	41.5
	27.4	55.18	46.2	51.7	36.79	20.5	21.14	50.3	31.57	44.0
Oct. 7.4	55.11	47.6	18.99	54.8	36.73	20.8	21.08	51.8	31.49	46.3
	17.4	55.01	48.6	57.6	36.65	21.3	20.98	53.3	31.38	48.3
	27.4	54.89	49.3	60.0	36.55	21.9	20.85	54.7	31.24	50.0
Nov. 6.3	54.76	49.8	18.00	61.9	36.43	22.6	20.71	56.0	31.07	51.2
	16.3	54.61	49.9	63.4	36.30	23.3	20.55	57.2	30.88	52.0
	26.3	54.46	49.7	64.3	36.17	24.0	20.39	58.1	30.68	52.4
Dec. 6.2	54.31	49.2	16.69	64.6	36.04	24.8	20.23	58.8	30.48	52.4
	16.2	54.17	48.4	64.3	35.92	25.5	20.08	59.2	30.27	51.9
	26.2	54.04	47.3	63.5	35.81	26.1	19.95	59.4	30.08	50.9
	36.2	53.92	46.0	62.1	35.72	26.7	19.83	59.3	29.90	49.5

FIXED STARS, 1903.

(CONSTANTS OF STRUVE AND PETERS.)

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APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Pegasi. (Markab.)		ϕ Aquarii.		ϵ Cephei.		τ Pegasi.		θ Piscium.	
	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.
	h m	° '	h m	° '	h m	° '	h m	° '	h m	° '
	22 59	+14 40	23 09	- 6 33	23 14	+67 34	23 15	+23 12	23 23	+ 5 50
Jan. 1.2	55.68	68.1	17.79	78.2	38.90	72.1	50.22	44.1	2.87	50.9
11.2	55.58	66.9	17.69	78.7	38.45	70.8	50.10	42.9	2.77	50.0
21.1	55.49	65.6	17.61	79.2	38.04	68.9	49.99	41.4	2.68	49.1
31.1	55.43	64.3	17.55	79.6	37.70	66.6	49.91	39.8	2.61	48.2
Feb. 10.1	55.39	63.0	17.52	79.8	37.43	63.9	49.84	38.2	2.55	47.4
20.1	55.38	61.8	17.51	79.8	37.24	61.0	49.81	36.6	2.53	46.7
Mar. 2.0	55.41	60.6	17.53	79.6	37.15	57.9	49.82	35.0	2.53	46.1
12.0	55.47	59.7	17.58	79.3	37.16	54.8	49.86	33.6	2.57	45.7
22.0	55.56	59.0	17.67	78.7	37.28	51.8	49.94	32.5	2.64	45.5
31.9	55.69	58.7	17.79	77.8	37.51	49.1	50.06	31.6	2.74	45.7
Apr. 10.9	55.86	58.6	17.94	76.8	37.83	46.7	50.22	31.0	2.89	46.1
20.9	56.07	58.9	18.14	75.5	38.25	44.7	50.42	30.9	3.07	46.8
30.9	56.31	59.6	18.36	74.0	38.74	43.2	50.66	31.1	3.29	47.8
May 10.8	56.57	60.6	18.62	72.3	39.30	42.3	50.93	31.7	3.54	49.0
20.8	56.86	61.9	18.89	70.5	39.90	42.0	51.22	32.7	3.81	50.5
30.8	57.17	63.5	19.19	68.6	40.53	42.2	51.53	34.1	4.10	52.2
June 9.7	57.48	65.3	19.49	66.6	41.17	43.0	51.85	35.8	4.40	54.1
19.7	57.78	67.4	19.80	64.7	41.80	44.3	52.17	37.7	4.71	56.1
29.7	58.08	69.5	20.10	62.8	42.41	46.2	52.49	39.9	5.01	58.1
July 9.7	58.36	71.8	20.39	61.1	42.97	48.5	52.78	42.2	5.30	60.1
19.6	58.62	74.0	20.65	59.5	43.48	51.2	53.06	44.6	5.56	62.1
29.6	58.85	76.2	20.89	58.1	43.92	54.2	53.30	47.1	5.80	64.0
Aug. 8.6	59.04	78.4	21.09	57.0	44.28	57.5	53.51	49.5	6.01	65.8
18.6	59.19	80.4	21.25	56.1	44.56	61.0	53.68	51.9	6.18	67.3
28.5	59.30	82.2	21.37	55.4	44.76	64.6	53.80	54.1	6.31	68.7
Sept. 7.5	59.36	83.8	21.45	55.0	44.86	68.2	53.88	56.2	6.40	69.8
17.5	59.39	85.2	21.49	54.8	44.88	71.8	53.92	58.1	6.46	70.7
27.5	59.38	86.4	21.49	54.9	44.81	75.3	53.92	59.8	6.47	71.4
Oct. 7.4	59.33	87.4	21.46	55.2	44.66	78.6	53.89	61.2	6.45	71.9
17.4	59.26	88.0	21.39	55.6	44.43	81.6	53.83	62.4	6.40	72.1
27.4	59.16	88.5	21.30	56.1	44.13	84.3	53.73	63.3	6.32	72.2
Nov. 6.3	59.04	88.7	21.20	56.8	43.77	86.6	53.62	63.9	6.23	72.0
16.3	58.92	88.6	21.08	57.5	43.36	88.4	53.50	64.2	6.12	71.7
26.3	58.79	88.3	20.96	58.3	42.91	89.7	53.36	64.2	6.00	71.2
Dec. 6.3	58.65	87.7	20.83	59.0	42.44	90.5	53.22	63.8	5.88	70.6
16.2	58.52	87.0	20.71	59.8	41.95	90.7	53.08	63.2	5.75	69.9
26.2	58.40	86.0	20.59	60.5	41.46	90.2	52.94	62.3	5.63	69.0
36.2	58.29	84.9	20.49	61.1	40.99	89.2	52.81	61.2	5.52	68.1

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	♄ Andromedæ.			♓ Piscium.			♄ Cephei.			♓ Aquarii.		
	Right Ascension.		Declination North.	Right Ascension.		Declination North.	Right Ascension.		Declination North.	Right Ascension.		Declination South.
	h m	s	° ' "	h m	s	° ' "	h m	s	° ' "	h m	s	° ' "
	23 32		+45 55	23 34		+ 5 06	23 35		+77 05	23 39		-18 48
Jan. 1.2	49.33		74.2	57.75		5.9	23.12		50.1	10.14		59.5
11.2	49.13	.20	72.9	57.64	.11	5.0	22.26	.86	49.2	10.02	.12	59.8
21.2	48.94	.19	71.2	57.55	.09	4.1	21.46	.80	47.6	9.92	.10	59.9
31.1	48.78	.16	69.2	57.47	.08	3.3	20.75	.71	45.6	9.84	.08	59.7
Feb. 10.1	48.65	.13	66.9	57.41	.06	2.5	20.16	.59	43.1	9.77	.07	59.3
		.09			.04			.44			.04	
20.1	48.56		64.5	57.37		1.8	19.72		40.3	9.73		58.6
Mar. 2.0	48.51	.05	62.0	57.36	.01	1.3	19.44	.28	37.2	9.72	.01	57.7
12.0	48.52	.01	59.5	57.39	.03	0.9	19.34	.10	34.0	9.74	.02	56.6
22.0	48.59	.07	57.2	57.45	.06	0.8	19.42	.08	30.9	9.79	.05	55.2
Apr. 1.0	48.71	.12	55.2	57.54	.09	1.0	19.68	.26	27.9	9.89	.10	53.6
		.18			.14			.44			.13	
10.9	48.89		53.5	57.68		1.4	20.12		25.1	10.02		51.9
20.9	49.12	.23	52.1	57.85	.17	2.1	20.72	.60	22.7	10.19	.17	50.0
30.9	49.40	.28	51.3	58.06	.21	3.1	21.46	.74	20.8	10.40	.21	47.9
May 10.9	49.73	.33	50.9	58.30	.24	4.3	22.32	.86	19.4	10.64	.24	45.8
20.8	50.08	.35	51.0	58.57	.27	5.8	23.26	.94	18.6	10.91	.27	43.6
		.38			.29			1.00			.29	
30.8	50.46		51.6	58.86		7.5	24.26		18.3	11.20		41.5
June 9.8	50.86	.40	52.7	59.16	.30	9.4	25.29	1.03	18.6	11.51	.31	39.4
19.7	51.25	.39	54.2	59.46	.30	11.3	26.32	1.03	19.5	11.83	.32	37.5
29.7	51.64	.39	56.1	59.77	.31	13.3	27.31	.99	20.9	12.15	.32	35.7
July 9.7	52.01	.37	58.4	60.06	.29	15.3	28.25	.94	22.8	12.45	.30	34.1
		.34			.27			.86			.29	
19.6	52.35		61.0	60.33		17.3	29.11		25.2	12.74		32.9
29.6	52.65	.30	63.8	60.58	.25	19.2	29.87	.76	28.0	13.01	.27	31.9
Aug. 8.6	52.91	.26	66.8	60.80	.22	20.9	30.51	.64	31.1	13.24	.23	31.2
18.6	53.13	.22	69.8	60.98	.18	22.4	31.02	.51	34.5	13.43	.19	30.9
28.5	53.29	.16	72.9	61.12	.14	23.7	31.40	.38	38.0	13.59	.16	30.8
		.12			.11			.24			.12	
Sept 7.5	53.41		76.0	61.23		24.8	31.64		41.7	13.71		31.1
17.5	53.47	.06	78.9	61.29	.06	25.7	31.73	.09	45.5	13.78	.07	31.6
27.5	53.48	.01	81.7	61.32	.03	26.3	31.68	.05	49.1	13.81	.03	32.4
Oct. 7.4	53.44	.04	84.3	61.31	.01	26.7	31.48	.20	52.7	13.80	.01	33.4
17.4	53.37	.07	86.6	61.27	.04	26.9	31.15	.33	56.1	13.75	.05	34.5
		.12			.06			.47			.07	
27.4	53.25		88.6	61.21		26.9	30.68		59.2	13.68		35.7
Nov. 6.4	53.10	.15	90.3	61.12	.09	26.7	30.10	.58	62.0	13.59	.09	36.9
16.3	52.93	.17	91.6	61.02	.10	26.3	29.41	.69	64.4	13.48	.11	38.1
26.3	52.74	.19	92.4	60.91	.11	25.7	28.64	.77	66.2	13.35	.13	39.2
Dec. 6.3	52.53	.21	92.8	60.79	.12	25.2	27.80	.84	67.5	13.22	.13	40.1
		.21			.12			.89			.13	
16.3	52.32		92.7	60.67		24.5	26.91		68.1	13.09		41.0
26.2	52.10	.22	92.1	60.55	.12	23.7	26.01	.90	68.2	12.96	.13	41.6
36.2	51.89	.21	91.1	60.44	.11	22.8	25.12	.89	67.6	12.84	.12	42.0

FIXED STARS, 1903.

(CONSTANTS OF STRUVE AND PETERS.)

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APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	δ Sculptoris.			γ ¹ Octantis.			Groombridge 4163.			ω Piscium.		
	Right Ascension.		Declination South.	Right Ascension.		Declination South.	Right Ascension.		Declination North.	Right Ascension.		Declination North.
	h m		° ' "	h m		° ' "	h m		° ' "	h m		° ' "
	23 43		−28 39	23 46		−82 32	23 50		+73 52	23 54		+ 6 19
	s		"	s		"	s		"	s		"
Jan. 1.2	52.17		68.4	19.06	1.47	105.1	7.70	.38	35.8	20.02		38.6
11.2	52.04	.13	68.4	17.59	1.47	103.5	7.02	.68	35.0	19.90	.12	37.7
21.2	51.92	.12	68.1	16.27	1.32	101.3	6.38	.64	33.6	19.80	.10	36.9
31.1	51.82	.10	67.5	15.13	1.14	98.7	5.80	.58	31.7	19.70	.10	36.0
Feb. 10.1	51.74	.08	66.6	14.20	0.93	95.6	5.30	.50	29.3	19.63	.07	35.2
		.05			0.70			.38			.06	
20.1	51.69		65.4	13.50		92.2	4.92		26.6	19.57		34.5
Mar. 2.1	51.67	.02	63.9	13.05	0.45	88.6	4.66	.26	23.6	19.54	.03	33.9
12.0	51.68	.01	62.2	12.84	0.21	84.9	4.54	.12	20.5	19.55	.01	33.5
22.0	51.73	.05	60.3	12.89	0.05	81.1	4.57	.03	17.4	19.59	.04	33.4
Apr. 1.0	51.82	.09	58.2	13.20	0.31	77.3	4.74	.17	14.4	19.67	.08	33.4
		.13			0.54			.32			.11	
11.0	51.95		56.0	13.74		73.6	5.06		11.6	19.78		33.8
20.9	52.12	.17	53.6	14.53	0.79	70.1	5.52	.46	9.2	19.94	.16	34.4
30.9	52.34	.22	51.2	15.53	1.00	66.9	6.09	.57	7.3	20.13	.19	35.3
May 10.9	52.59	.25	48.8	16.73	1.20	64.0	6.76	.29	5.8	20.36	.23	36.5
20.8	52.87	.28	46.4	18.10	1.37	61.5	7.52	.76	4.8	20.62	.26	37.9
		.30			1.52			.81			.28	
30.8	53.17		44.1	19.62		59.5	8.33		4.4	20.90		39.5
June 9.8	53.50	.33	42.0	21.23	1.61	57.9	9.17	.84	4.6	21.20	.30	41.3
19.8	53.83	.33	40.1	22.92	1.69	56.9	10.02	.85	4.8	21.51	.31	43.3
29.7	54.17	.34	38.4	24.62	1.70	56.4	10.86	.84	5.4	21.81	.30	45.3
July 9.7	54.49	.32	37.1	26.30	1.68	56.5	11.66	.80	6.7	22.11	.30	47.3
		.31			1.61			.74			.28	
19.7	54.80		36.1	27.91		57.2	12.40		10.7	22.39		49.3
29.6	55.08	.28	35.5	29.40	1.49	58.4	13.06	.66	13.4	22.65	.26	51.2
Aug. 8.6	55.34	.26	35.3	30.72	1.32	60.1	13.64	.58	16.4	22.88	.23	52.9
18.6	55.55	.21	35.4	31.83	1.11	62.2	14.12	.48	19.7	23.08	.20	54.5
28.6	55.72	.17	35.9	32.70	0.87	64.8	14.49	.37	23.2	23.24	.16	55.9
		.12			0.59			.26			.12	
Sept. 7.5	55.84		36.7	33.29		67.7	14.75		26.8	23.36		57.1
17.5	55.92	.08	37.8	33.57	0.28	70.7	14.89	.14	30.5	23.44	.08	58.1
27.5	55.96	.04	39.2	33.55	0.02	73.8	14.91	.02	34.1	23.49	.05	58.8
Oct. 7.5	55.95	.01	40.7	33.22	0.33	76.9	14.82	.09	37.7	23.50	.01	59.3
17.4	55.90	.05	42.3	32.59	0.63	79.9	14.61	.21	41.1	23.48	.02	59.5
		.08			0.91			.31			.05	
27.4	55.82		43.9	31.68		82.6	14.30		44.2	23.43		59.6
Nov. 6.4	55.72	.10	45.5	30.54	1.14	84.9	13.90	.40	47.0	23.36	.07	59.5
16.4	55.59	.13	47.0	29.20	1.34	86.7	13.40	.50	49.4	23.27	.09	59.2
26.3	55.45	.14	48.3	27.71	1.49	87.9	12.83	.57	51.3	23.17	.10	58.7
Dec. 6.3	55.30	.15	49.3	26.13	1.58	88.6	12.20	.63	52.7	23.06	.11	58.2
		.15			1.61			.68			.12	
16.3	55.15		50.1	24.52		88.6	11.52		53.5	22.94		57.5
26.2	55.00	.15	50.7	22.93	1.59	88.0	10.82	.70	53.7	22.82	.12	56.7
36.2	54.86	.14	50.9	21.41	1.52	86.8	10.13	.69	53.3	22.70	.12	55.9

FOR WASHINGTON MEAN AND APPARENT NOON.

Date.	Apparent Right Ascension.		Apparent Declination.		Hourly Motion.		Equation of Time for Apparent Noon.	Semi-diameter at Apparent Noon.	Sidereal Time of Semid. Passing Meridian.	Sidereal Time of Mean Noon.
	Mean Noon.	App. Noon.	Mean Noon.	App. Noon.	Right Ascen.	Declination.				
	h m s	s	° ' "	"	s	"	m s	"	m s	h m s
Jan. 1	18 44 05.48	6.11	-23 03 44.2	43.6	11.051	+ 11.64	+ 3 23.98	16 17.81	1 11.06	18 40 41.57
2	18 48 30.52	31.23	22 58 51.0	50.2	11.037	12.78	3 52.48	16 17.83	1 11.02	18 44 38.12
3	18 52 55.22	56.02	22 53 30.6	29.5	11.022	13.92	4 20.63	16 17.83	1 10.98	18 48 34.68
4	18 57 19.54	20.42	22 47 42.8	41.6	11.005	15.06	4 48.39	16 17.82	1 10.93	18 52 31.24
5	19 01 43.45	44.41	22 41 27.9	26.5	10.987	16.18	5 15.75	16 17.81	1 10.87	18 56 27.80
6	19 06 06.91	7.95	-22 34 46.0	44.4	10.968	+ 17.30	+ 5 42.67	16 17.81	1 10.81	19 00 24.35
7	19 10 29.90	31.02	22 27 37.4	35.5	10.948	18.41	6 09.11	16 17.80	1 10.75	19 04 20.91
8	19 14 52.39	53.59	22 20 02.2	0.0	10.926	19.51	6 35.05	16 17.79	1 10.69	19 08 17.47
9	19 19 14.36	15.63	22 11 60.7	58.3	10.903	20.60	7 00.46	16 17.76	1 10.62	19 12 14.02
10	19 23 35.77	37.12	22 03 33.1	30.5	10.880	21.68	7 25.32	16 17.72	1 10.54	19 16 10.58
11	19 27 56.62	58.04	-21 54 39.8	36.8	10.856	+ 22.75	+ 7 49.62	16 17.69	1 10.46	19 20 07.14
12	19 32 16.88	18.36	21 45 20.8	17.5	10.832	23.81	8 13.33	16 17.64	1 10.38	19 24 03.69
13	19 36 36.53	38.08	21 35 36.4	32.9	10.806	24.87	8 36.42	16 17.59	1 10.30	19 28 00.25
14	19 40 55.56	57.17	21 25 27.1	23.3	10.780	25.91	8 58.89	16 17.53	1 10.21	19 31 56.81
15	19 45 13.95	15.62	21 14 52.9	48.7	10.753	26.93	9 20.73	16 17.47	1 10.12	19 35 53.36
16	19 49 31.69	33.42	-21 03 54.2	49.7	10.725	+ 27.95	+ 9 41.91	16 17.40	1 10.03	19 39 49.92
17	19 53 48.77	50.55	20 52 31.3	26.4	10.697	28.95	10 02.42	16 17.32	1 09.94	19 43 46.48
18	19 58 05.15	6.99	20 40 44.5	39.3	10.669	29.94	10 22.26	16 17.24	1 09.84	19 47 43.03
19	20 02 20.84	22.74	20 28 34.1	28.7	10.639	30.91	10 41.40	16 17.15	1 09.74	19 51 39.59
20	20 06 35.83	37.78	20 15 60.5	54.7	10.610	31.87	10 59.84	16 17.07	1 09.64	19 55 36.14
21	20 10 50.10	52.09	-20 02 64.0	57.9	10.580	+ 32.82	+ 11 17.54	16 16.97	1 09.54	19 59 32.70
22	20 15 03.62	5.66	19 49 45.0	38.4	10.549	33.75	11 34.49	16 16.86	1 09.43	20 03 29.26
23	20 19 16.39	18.46	19 35 63.7	56.9	10.517	34.67	11 50.71	16 16.75	1 09.33	20 07 25.81
24	20 23 28.40	30.51	19 21 60.7	53.5	10.485	35.57	12 06.16	16 16.64	1 09.22	20 11 22.37
25	20 27 39.63	41.78	19 07 36.2	28.7	10.452	36.45	12 20.84	16 16.53	1 09.11	20 15 18.92
26	20 31 50.08	52.26	-18 52 50.6	42.8	10.419	+ 37.33	+ 12 34.73	16 16.41	1 09.00	20 19 15.48
27	20 35 59.74	61.95	18 37 44.5	36.3	10.388	38.18	12 47.82	16 16.29	1 08.89	20 23 12.03
28	20 40 08.59	10.83	18 22 18.0	9.5	10.352	39.01	13 00.10	16 16.17	1 08.77	20 27 08.59
29	20 44 16.62	18.89	18 06 31.6	22.9	10.318	39.83	13 11.59	16 16.04	1 08.66	20 31 05.14
30	20 48 23.84	26.13	17 50 25.8	16.7	10.284	40.64	13 22.25	16 15.91	1 08.55	20 35 01.70
31	20 52 30.23	32.54	-17 33 60.9	51.6	10.250	+ 41.42	+ 13 32.07	16 15.77	1 08.43	20 38 58.25
Feb. 1	20 56 35.79	38.12	17 17 17.4	7.6	10.215	42.19	13 41.06	16 15.63	1 08.31	20 42 54.81
2	21 00 40.51	42.85	17 00 15.7	5.8	10.180	42.94	13 49.23	16 15.49	1 08.20	20 46 51.36
3	21 04 44.40	46.76	16 42 56.1	45.9	10.145	43.67	13 56.55	16 15.35	1 08.08	20 50 47.92
4	21 08 47.45	49.82	16 25 19.0	8.6	10.110	44.40	14 03.04	16 15.20	1 07.97	20 54 44.47
5	21 12 49.66	52.03	-16 07 25.0	14.4	10.075	+ 45.09	+ 14 08.69	16 15.05	1 07.86	20 58 41.03
6	21 16 51.04	53.42	15 49 14.5	3.7	10.041	45.78	14 13.52	16 14.90	1 07.74	21 02 37.58
7	21 20 51.59	53.97	15 30 47.8	36.7	10.006	46.45	14 17.50	16 14.73	1 07.63	21 06 34.14
8	21 24 51.32	53.70	15 11 65.2	54.0	9.972	47.09	14 20.66	16 14.57	1 07.51	21 10 30.69
9	21 28 50.23	52.60	14 52 67.4	56.0	9.938	47.72	14 23.01	16 14.39	1 07.40	21 14 27.24
10	21 32 48.34	50.71	-14 33 54.5	42.9	9.905	+ 48.34	+ 14 24.55	16 14.22	1 07.29	21 18 23.80
11	21 36 45.65	48.02	14 14 27.2	15.4	9.872	48.93	14 25.32	16 14.04	1 07.18	21 22 20.35
12	21 40 42.20	44.56	13 54 45.6	33.7	9.841	49.52	14 25.28	16 13.85	1 07.06	21 26 16.91
13	21 44 37.98	40.33	13 34 50.2	38.2	9.809	50.09	14 24.50	16 13.66	1 06.95	21 30 13.46
14	21 48 33.01	35.35	13 14 41.5	29.3	9.778	50.63	14 22.97	16 13.47	1 06.85	21 34 10.01
15	21 52 27.30	29.64	-12 54 19.7	7.5	9.748	+ 51.17	+ 14 20.72	16 13.27	1 06.75	21 38 06.57
16	21 56 20.88	23.20	12 33 45.4	33.2	9.718	+ 51.68	+ 14 17.74	16 13.07	1 06.64	21 42 03.12

NOTE.—For mean time interval of semidiameter passing meridian, subtract 0.19^s from the sidereal interval.

FOR WASHINGTON MEAN AND APPARENT NOON.

Date.	Apparent Right Ascension.		Apparent Declination.		Hourly Motion.		Equation of Time for Apparent Noon.	Semi-diameter at Apparent Noon.	Sidereal Time of Semid. Passing Meridian	Sidereal Time of Mean Noon.
	Mean Noon.	App. Noon.	Mean Noon.	App. Noon.	Right Ascen.	Declination.				
	h m s	s	° ' "	"	s	"	m s	' "	m s	h m s
Feb. 16	21 56 20.88	23.20	- 12 33 45.4	33.2	9.718	+ 51.68	+ 14 17.74	16 13.07	1 06.64	21 42 03.12
17	22 00 13.76	16.05	12 12 59.0	46.7	9.689	52.18	14 14.05	16 12.87	1 06.54	21 45 59.67
18	22 04 05.93	8.21	11 51 60.8	48.4	9.660	52.66	14 09.67	16 12.65	1 06.44	21 49 56.23
19	22 07 57.44	59.70	11 30 51.3	38.8	9.632	53.12	14 04.60	16 12.44	1 06.34	21 53 52.78
20	22 11 48.27	50.51	11 09 30.8	18.3	9.605	53.57	13 58.88	16 12.22	1 06.24	21 57 49.33
21	22 15 38.46	40.67	- 10 47 59.8	47.3	9.578	+ 54.00	+ 13 52.50	16 11.99	1 06.14	22 01 45.89
22	22 19 28.00	30.19	10 26 18.8	6.3	9.552	54.41	13 45.49	16 11.77	1 06.05	22 05 42.44
23	22 23 16.92	19.08	10 04 28.1	15.6	9.526	54.81	13 37.86	16 11.54	1 05.96	22 09 38.99
24	22 27 05.22	7.36	9 42 28.1	15.7	9.501	55.18	13 29.61	16 11.31	1 05.87	22 13 35.55
25	22 30 52.93	55.04	9 20 19.3	7.0	9.476	55.54	13 20.76	16 11.08	1 05.78	22 17 32.10
26	22 34 40.06	42.14	- 8 57 62.0	49.8	9.452	+ 55.88	+ 13 11.32	16 10.85	1 05.70	22 21 28.65
27	22 38 26.60	28.66	8 35 36.9	24.7	9.428	56.20	13 01.32	16 10.61	1 05.61	22 25 25.20
28	22 42 12.60	14.62	8 12 64.1	52.0	9.405	56.51	12 50.74	16 10.37	1 05.53	22 29 21.76
Mar. 1	22 45 58.05	60.03	7 50 24.2	12.2	9.382	56.81	12 39.64	16 10.13	1 05.45	22 33 18.31
2	22 49 42.97	44.92	7 27 37.5	25.6	9.362	57.07	12 28.01	16 09.89	1 05.39	22 37 14.86
3	22 53 27.38	29.29	- 7 04 44.5	32.8	9.340	+ 57.33	+ 12 15.87	16 09.66	1 05.32	22 41 11.41
4	22 57 11.29	13.16	6 41 45.5	34.0	9.320	57.57	12 03.22	16 09.42	1 05.25	22 45 07.97
5	23 00 54.72	56.55	6 18 41.1	29.7	9.300	57.79	11 50.08	16 09.17	1 05.18	22 49 04.52
6	23 04 37.66	39.46	5 55 31.4	20.2	9.280	58.00	11 36.49	16 08.93	1 05.11	22 53 01.07
7	23 08 20.18	21.93	5 32 17.1	6.1	9.262	58.19	11 22.45	16 08.68	1 05.05	22 56 57.62
8	23 12 02.26	3.97	- 5 08 58.4	47.6	9.245	+ 58.36	+ 11 07.97	16 08.44	1 04.99	23 00 54.17
9	23 15 43.93	45.60	4 45 35.8	25.1	9.229	58.52	10 53.09	16 08.18	1 04.94	23 04 50.73
10	23 19 25.22	26.85	4 21 69.5	59.1	9.213	58.67	10 37.83	16 07.92	1 04.88	23 08 47.28
11	23 23 06.14	7.73	3 58 40.0	29.8	9.198	58.79	10 22.20	16 07.67	1 04.83	23 12 43.83
12	23 26 46.73	48.28	3 34 67.6	57.7	9.184	58.90	10 06.24	16 07.41	1 04.78	23 16 40.38
13	23 30 27.00	28.51	- 3 11 32.7	23.0	9.172	+ 59.00	+ 9 49.96	16 07.15	1 04.74	23 20 36.93
14	23 34 06.99	8.45	2 47 55.5	46.1	9.161	59.08	9 33.39	16 06.88	1 04.70	23 24 33.49
15	23 37 46.72	48.13	2 24 16.6	7.4	9.150	59.15	9 16.57	16 06.63	1 04.66	23 28 30.04
16	23 41 26.19	27.56	2 00 36.2	27.3	9.140	59.21	8 59.50	16 06.35	1 04.62	23 32 26.59
17	23 45 05.46	6.78	1 36 54.6	46.0	9.132	59.25	8 42.20	16 06.08	1 04.59	23 36 23.14
18	23 48 44.53	45.81	- 1 13 12.3	3.9	9.125	+ 59.28	+ 8 24.74	16 05.81	1 04.56	23 40 19.69
19	23 52 23.42	24.66	0 49 29.6	21.6	9.118	59.28	8 07.09	16 05.53	1 04.54	23 44 16.24
20	23 56 02.17	3.36	0 25 46.9	39.1	9.112	59.28	7 49.28	16 05.25	1 04.52	23 48 12.80
21	23 59 40.80	41.95	- 0 01 64.5	57.0	9.107	59.26	7 31.35	16 04.98	1 04.50	23 52 09.35
22	0 03 19.32	20.42	+ 0 21 37.2	44.4	9.103	59.22	7 13.32	16 04.69	1 04.48	23 56 05.90
23	0 06 57.74	58.79	+ 0 45 17.8	24.7	9.099	+ 59.17	+ 6 55.20	16 04.42	1 04.47	0 00 02.45
24	0 10 36.09	37.09	1 08 57.1	63.6	9.097	59.10	6 37.01	16 04.13	1 04.46	0 03 59.00
25	0 14 14.39	15.34	1 32 34.5	40.7	9.095	59.02	6 18.75	16 03.85	1 04.45	0 07 55.56
26	0 17 52.66	53.57	1 56 09.7	15.6	9.094	58.92	6 00.46	16 03.57	1 04.44	0 11 52.11
27	0 21 30.91	31.78	2 19 42.4	48.0	9.094	58.80	5 42.18	16 03.29	1 04.44	0 15 48.66
28	0 25 09.16	9.98	+ 2 43 12.2	17.5	9.094	+ 58.67	+ 5 23.88	16 03.01	1 04.44	0 19 45.21
29	0 28 47.43	48.20	3 06 38.8	43.8	9.094	58.54	5 05.60	16 02.74	1 04.44	0 23 41.76
30	0 32 25.74	26.46	3 30 01.7	6.4	9.096	58.38	4 47.36	16 02.46	1 04.45	0 27 38.31
31	0 36 04.09	4.78	3 53 20.6	25.0	9.099	58.20	4 29.17	16 02.19	1 04.46	0 31 34.87
Apr. 1	0 39 42.51	43.15	4 16 35.1	39.2	9.103	58.01	4 11.05	16 01.93	1 04.47	0 35 31.42
2	0 43 21.01	21.60	+ 4 39 44.9	48.6	9.106	+ 57.81	+ 3 52.99	16 01.65	1 04.48	0 39 27.97
3	0 46 59.60	60.14	+ 5 02 49.5	53.0	9.110	+ 57.58	+ 3 35.03	16 01.38	1 04.50	0 43 24.52

NOTE.—For mean time interval of semidiameter passing meridian, subtract 0.18^s from the sidereal interval.

FOR WASHINGTON MEAN AND APPARENT NOON.											
Date.	Apparent Right Ascension.		Apparent Declination.		Hourly Motion.		Equation of Time for Apparent Noon.	Semi-diameter at Apparent Noon.	Sidereal Time of Semid. Passing Meridian.	Sidereal Time of Mean Noon.	
	Mean Noon.	App. Noon.	Mean Noon.	App. Noon.	Right Ascen.	Declination.					
	h m s	s	° ' "	"	s	"	m s	' "	m s	h m s	
Apr.	1	0 39 42.51	43.15	+ 4 16 35.1	39.2	9-103	+ 58.01	+ 4 11.05	16 01.93	1 04.47	0 35 31.4
	2	0 43 21.01	21.60	4 39 44.9	48.6	9-106	57.81	3 52.99	16 01.65	1 04.48	0 39 27.97
	3	0 46 59.60	60.14	5 02 49.5	53.0	9-110	57.58	3 35.03	16 01.38	1 04.50	0 43 24.52
	4	0 50 38.32	38.81	5 25 48.8	51.9	9-113	57.35	3 17.19	16 01.11	1 04.52	0 47 21.08
	5	0 54 17.16	17.61	5 48 42.2	45.0	9-121	57.10	2 59.48	16 00.84	1 04.55	0 51 17.63
	6	0 57 56.14	56.55	+ 6 11 29.4	32.0	9-128	+ 56.84	+ 2 41.93	16 00.57	1 04.58	0 55 14.18
	7	1 01 35.31	35.67	6 34 10.2	12.5	9-136	56.56	2 24.54	16 00.30	1 04.61	0 59 10.73
	8	1 05 14.65	14.98	6 56 44.2	46.2	9-144	56.27	2 07.35	16 00.03	1 04.64	1 03 07.28
	9	1 08 54.21	54.50	7 19 11.1	12.8	9-153	55.97	1 50.35	15 59.76	1 04.68	1 07 03.84
	10	1 12 34.00	34.24	7 41 30.4	31.9	9-163	55.65	1 33.59	15 59.49	1 04.71	1 11 00.39
	11	1 16 14.04	14.24	+ 8 03 42.0	43.2	9-174	+ 55.32	+ 1 17.09	15 59.22	1 04.75	1 14 56.94
	12	1 19 54.38	54.53	8 25 45.5	46.4	9-186	54.98	1 00.87	15 58.95	1 04.79	1 18 53.49
	13	1 23 34.99	35.11	8 47 40.6	41.3	9-199	54.62	0 45.01	15 58.68	1 04.84	1 22 50.04
	14	1 27 15.93	16.01	9 09 26.9	27.3	9-213	54.24	0 29.32	15 58.40	1 04.88	1 26 46.60
	15	1 30 57.20	57.24	9 31 04.1	4.3	9-227	53.86	+ 0 14.05	15 58.13	1 04.93	1 30 43.15
	16	1 34 38.82	38.82	+ 9 52 32.0	31.9	9-241	+ 53.47	- 0 00.88	15 57.85	1 04.98	1 34 39.70
	17	1 38 20.81	20.77	10 13 50.0	49.8	9-257	53.05	0 15.44	15 57.59	1 05.03	1 38 36.26
	18	1 42 03.20	3.13	10 34 58.1	57.6	9-274	52.62	0 29.61	15 57.32	1 05.09	1 42 32.81
	19	1 45 45.99	45.88	10 55 55.8	55.1	9-291	52.19	0 43.38	15 57.06	1 05.15	1 46 29.36
	20	1 49 29.19	29.04	11 16 42.7	41.9	9-309	51.74	0 56.72	15 56.79	1 05.21	1 50 25.92
	21	1 53 12.83	12.65	+ 11 37 18.6	17.6	9-327	+ 51.26	- 1 09.63	15 56.53	1 05.27	1 54 22.47
	22	1 56 56.91	56.70	11 57 43.1	42.0	9-346	50.78	1 22.10	15 56.26	1 05.33	1 58 19.02
	23	2 00 41.44	41.20	12 17 55.9	54.6	9-365	50.28	1 34.11	15 56.00	1 05.40	2 02 15.57
	24	2 04 26.45	26.17	12 37 56.6	55.2	9-385	49.77	1 45.67	15 55.74	1 05.46	2 06 12.13
	25	2 08 11.93	11.63	12 57 45.0	43.4	9-405	49.25	1 56.74	15 55.49	1 05.53	2 10 08.68
	26	2 11 57.89	57.56	+ 13 17 20.6	18.8	9-425	+ 48.71	- 2 07.32	15 55.22	1 05.60	2 14 05.23
	27	2 15 44.35	43.99	13 36 43.1	41.3	9-446	48.16	2 17.42	15 54.97	1 05.67	2 18 01.79
	28	2 19 31.30	30.91	13 55 52.2	50.3	9-466	47.60	2 27.02	15 54.71	1 05.75	2 21 58.34
	29	2 23 18.74	18.33	14 14 47.5	45.5	9-487	47.02	2 36.13	15 54.48	1 05.82	2 25 54.90
	30	2 27 06.71	6.27	14 33 28.8	26.6	9-508	46.42	2 44.72	15 54.24	1 05.89	2 29 51.45
May	1	2 30 55.18	54.72	+ 14 51 55.6	53.4	9-530	+ 45.81	- 2 52.80	15 54.00	1 05.98	2 33 48.00
	2	2 34 44.16	43.69	15 10 07.7	5.4	9-551	45.19	3 00.38	15 53.77	1 06.06	2 37 44.56
	3	2 38 33.67	33.17	15 28 04.7	2.3	9-573	44.56	3 07.42	15 53.54	1 06.14	2 41 41.11
	4	2 42 23.70	23.18	15 45 46.3	44.0	9-595	43.91	3 13.96	15 53.32	1 06.22	2 45 37.66
	5	2 46 14.25	13.72	16 03 12.2	9.8	9-618	43.25	3 19.95	15 53.10	1 06.30	2 49 34.22
	6	2 50 05.35	4.80	+ 16 20 22.1	19.6	9-641	+ 42.58	- 3 25.41	15 52.87	1 06.38	2 53 30.77
	7	2 53 56.99	56.43	16 37 15.7	13.2	9-663	41.89	3 30.32	15 52.66	1 06.46	2 57 27.33
	8	2 57 49.18	48.60	16 53 52.6	50.2	9-686	41.19	3 34.68	15 52.44	1 06.54	3 01 23.88
	9	3 01 41.94	41.35	17 10 12.7	10.3	9-710	40.48	3 38.49	15 52.22	1 06.62	3 05 20.44
	10	3 05 35.25	34.65	17 26 15.6	13.2	9-733	39.76	3 41.73	15 52.01	1 06.70	3 09 16.99
	11	3 09 29.13	28.52	+ 17 41 61.0	58.6	9-757	+ 39.02	- 3 44.40	15 51.79	1 06.78	3 13 13.54
	12	3 13 23.59	22.98	17 57 28.7	26.3	9-781	38.28	3 46.50	15 51.58	1 06.87	3 17 10.10
	13	3 17 18.63	18.01	18 12 38.3	36.0	9-805	37.52	3 48.02	15 51.37	1 06.95	3 21 06.66
	14	3 21 14.26	13.63	18 27 29.6	27.2	9-830	36.76	3 48.95	15 51.16	1 07.03	3 25 03.21
	15	3 25 10.46	9.84	18 42 02.3	0.0	9-854	35.97	3 49.30	15 50.96	1 07.11	3 28 59.76
	16	3 29 07.25	6.62	+ 18 56 16.1	13.9	9-878	+ 35.18	- 3 49.07	15 50.75	1 07.20	3 32 56.32
	17	3 33 04.62	4.00	+ 19 10 10.8	8.7	9-903	+ 34.38	- 3 48.26	15 50.55	1 07.28	3 36 52.88

NOTE.—For mean time interval of semidiameter passing meridian, subtract 0.19^s from the sidereal interval.

FOR WASHINGTON MEAN AND APPARENT NOON.

Date.	Apparent Right Ascension.		Apparent Declination.		Hourly Motion.		Equation of Time for Apparent Noon.	Semi-diameter at Apparent Noon.	Sidereal Time of Semid. Passing Meridian.	Sidereal Time of Mean Noon.
	Mean Noon.	App. Noon.	Mean Noon.	App. Noon.	Right Ascen.	Declination.				
	h m s	s	" "	"	s	"	m s	"	m s	h m s
May 17	3 33 04.62	4.00	+ 19 10 10.8	8.7	9.903	+ 34.38	- 3 48.26	15 50.55	1 07.28	3 36 52.88
18	3 37 02.58	1.95	19 23 46.1	44.0	9.927	33.57	3 46.86	15 50.35	1 07.35	3 40 49.43
19	3 41 01.10	0.48	19 36 61.7	59.6	9.951	32.74	3 44.89	15 50.15	1 07.43	3 44 45.99
20	3 44 60.20	59.59	19 49 57.3	55.4	9.974	31.90	3 42.34	15 49.96	1 07.51	3 48 42.54
21	3 48 59.87	59.27	20 02 32.8	30.9	9.997	31.05	3 39.23	15 49.77	1 07.59	3 52 39.10
22	3 52 60.10	59.50	+ 20 14 47.7	45.9	10.021	+ 30.20	- 3 35.55	15 49.59	1 07.66	3 56 35.65
23	3 57 00.88	0.29	20 26 42.0	40.3	10.043	29.33	3 31.33	15 49.42	1 07.74	4 00 32.21
24	4 01 02.20	1.62	20 38 15.4	13.7	10.065	28.45	3 26.56	15 49.25	1 07.81	4 04 28.76
25	4 05 04.04	3.48	20 49 27.4	25.9	10.087	27.56	3 21.28	15 49.07	1 07.88	4 08 25.32
26	4 09 06.40	5.85	21 00 18.1	16.7	10.108	26.67	3 15.49	15 48.90	1 07.95	4 12 21.88
27	4 13 09.26	8.72	+ 21 10 47.1	45.8	10.129	+ 25.76	- 3 09.19	15 48.74	1 08.02	4 16 18.43
28	4 17 12.58	12.07	21 20 54.2	52.9	10.148	24.84	3 02.42	15 48.58	1 08.09	4 20 14.99
29	4 21 16.37	15.88	21 30 39.2	38.0	10.167	23.91	2 55.19	15 48.43	1 08.15	4 24 11.54
30	4 25 20.61	20.13	21 40 01.8	0.7	10.185	22.98	2 47.52	15 48.29	1 08.21	4 28 08.10
31	4 29 25.26	24.81	21 49 01.8	0.8	10.202	22.03	2 39.41	15 48.16	1 08.28	4 32 04.65
June 1	4 33 30.33	29.90	+ 21 57 39.1	38.2	10.219	+ 21.08	- 2 30.90	15 48.02	1 08.34	4 36 01.21
2	4 37 35.78	35.38	22 05 53.6	52.8	10.235	20.13	2 22.00	15 47.90	1 08.39	4 39 57.77
3	4 41 41.61	41.23	22 13 44.8	44.1	10.250	19.16	2 12.71	15 47.77	1 08.45	4 43 54.32
4	4 45 47.80	47.45	22 21 12.9	12.2	10.265	18.18	2 03.08	15 47.65	1 08.50	4 47 50.88
5	4 49 54.33	54.01	22 28 17.4	16.9	10.279	17.20	1 53.11	15 47.52	1 08.55	4 51 47.44
6	4 54 01.19	0.90	+ 22 34 58.5	58.0	10.293	+ 16.22	- 1 42.80	15 47.40	1 08.60	4 55 43.99
7	4 58 08.37	8.10	22 41 15.7	15.4	10.305	15.23	1 32.19	15 47.29	1 08.64	4 59 40.55
8	5 02 15.83	15.60	22 47 09.1	8.8	10.317	14.23	1 21.28	15 47.17	1 08.68	5 03 37.10
9	5 06 23.58	23.38	22 52 38.6	38.3	10.328	13.23	1 10.09	15 47.07	1 08.72	5 07 33.66
10	5 10 31.60	31.43	22 57 43.8	43.6	10.339	12.22	0 58.63	15 46.96	1 08.76	5 11 30.22
11	5 14 39.86	39.72	+ 23 02 25.0	24.8	10.349	+ 11.21	- 0 46.93	15 46.85	1 08.79	5 15 26.78
12	5 18 48.34	48.24	23 06 41.8	41.7	10.358	10.20	0 34.99	15 46.75	1 08.81	5 19 23.33
13	5 22 57.05	56.98	23 10 34.2	34.1	10.367	9.18	0 22.84	15 46.66	1 08.84	5 23 19.89
14	5 27 05.94	5.91	23 14 02.0	2.0	10.374	8.16	- 0 10.57	15 46.56	1 08.86	5 27 16.44
15	5 31 15.00	15.01	23 17 05.4	5.4	10.380	7.13	+ 0 02 00	15 46.48	1 08.88	5 31 13.00
16	5 35 24.22	24.26	+ 23 19 44.1	44.1	10.387	+ 6.10	+ 0 14.66	15 46.40	1 08.90	5 35 09.56
17	5 39 33.56	33.63	23 21 58.1	58.1	10.392	5.07	0 27.44	15 46.33	1 08.92	5 39 06.12
18	5 43 43.01	43.12	23 23 47.4	47.4	10.396	4.04	0 40.35	15 46.25	1 08.93	5 43 02.67
19	5 47 52.54	52.69	23 25 12.0	12.0	10.398	3.01	0 53.33	15 46.18	1 08.94	5 46 59.23
20	5 52 02.14	2.33	23 26 11.8	11.7	10.400	1.97	1 06.37	15 46.10	1 08.94	5 50 55.79
21	5 56 11.78	12.01	+ 23 26 46.7	46.7	10.402	+ 0.94	+ 1 19.46	15 46.03	1 08.94	5 54 52.34
22	6 00 21.42	21.69	23 26 56.9	56.9	10.402	- 0.09	1 32.54	15 45.97	1 08.94	5 58 48.90
23	6 04 31.05	31.36	23 26 42.3	42.3	10.401	1.12	1 45.62	15 45.92	1 08.93	6 02 45.46
24	6 08 40.64	40.98	23 26 02.9	2.8	10.398	2.16	1 58.65	15 45.86	1 08.93	6 06 42.01
25	6 12 50.15	50.53	23 24 58.8	58.6	10.394	3.19	2 11.60	15 45.82	1 08.92	6 10 38.57
26	6 16 59.54	59.96	+ 23 23 29.9	29.7	10.389	- 4.21	+ 2 24.44	15 45.78	1 08.90	6 14 35.13
27	6 21 08.82	9.27	23 21 36.4	36.2	10.384	5.23	2 37.16	15 45.76	1 08.88	6 18 31.68
28	6 25 17.93	18.42	23 19 18.2	17.9	10.376	6.26	2 49.72	15 45.73	1 08.85	6 22 28.24
29	6 29 26.85	27.38	23 16 35.5	35.2	10.367	7.28	3 02.08	15 45.71	1 08.83	6 26 24.80
30	6 33 35.57	36.12	23 13 28.4	27.9	10.358	8.30	3 14.24	15 45.70	1 08.80	6 30 21.35
July 1	6 37 44.04	44.63	+ 23 09 56.8	56.3	10.348	- 9.31	+ 3 26.16	15 45.70	1 08.77	6 34 17.91
2	6 41 52.26	52.88	+ 23 06 01.0	0.3	10.337	- 10.33	+ 3 37.82	15 45.70	1 08.74	6 38 14.47

NOTE.—For mean time interval of semidiameter passing meridian, subtract 0.18* from the sidereal interval.

FOR WASHINGTON MEAN AND APPARENT NOON.

Date.	Apparent Right Ascension.		Apparent Declination.		Hourly Motion.		Equation of Time for Apparent Noon.	Semi-diameter at Apparent Noon.	Sidereal Time of Semid. Passing Meridian.	Sidereal Time of Mean Noon.
	Mean Noon.	App. Noon.	Mean Noon.	App. Noon.	Right Ascen.	Declination.				
	h m s	s	° ' "	"	s	"	m s	' "	m s	h m s
July	1 6 37 44.04	44.63	+23 09 56.8	56.3	10.348	-9.31	+3 26.16	15 45.70	1 08.77	6 34 17.91
	2 6 41 52.26	52.88	23 06 01.0	0.3	10.337	10.33	3 37.82	15 45.70	1 08.74	6 38 14.47
	3 6 46 00.19	0.85	23 01 40.9	40.2	10.324	11.33	3 49.21	15 45.70	1 08.70	6 42 11.02
	4 6 50 07.83	8.52	22 56 56.7	55.9	10.311	12.34	4 00.29	15 45.70	1 08.66	6 46 07.58
	5 6 54 15.15	15.87	22 51 48.6	47.7	10.298	13.33	4 11.05	15 45.71	1 08.62	6 50 04.14
	6 6 58 22.14	22.88	+22 46 16.6	15.6	10.284	-14.33	+4 21.48	15 45.71	1 08.57	6 54 00.69
	7 7 02 28.77	29.54	22 40 20.8	19.7	10.269	15.32	4 31.56	15 45.73	1 08.52	6 57 57.25
	8 7 06 35.05	35.85	22 34 01.5	0.2	10.254	16.30	4 41.27	15 45.74	1 08.47	7 01 53.81
	9 7 10 40.94	41.76	22 27 18.8	17.4	10.238	17.26	4 50.61	15 45.77	1 08.42	7 05 50.36
	10 7 14 46.43	47.28	22 20 12.7	11.2	10.221	18.23	4 59.55	15 45.80	1 08.36	7 09 46.92
	11 7 18 51.51	52.38	+22 12 43.5	41.9	10.203	-19.19	+5 08.06	15 45.83	1 08.30	7 13 43.48
	12 7 22 56.17	57.06	22 04 51.4	49.6	10.185	20.14	5 16.17	15 45.86	1 08.24	7 17 40.03
	13 7 27 00.39	1.30	21 56 36.5	34.6	10.167	21.09	5 23.83	15 45.89	1 08.18	7 21 36.59
	14 7 31 04.16	5.09	21 47 59.0	56.9	10.148	22.03	5 31.05	15 45.93	1 08.11	7 25 33.14
	15 7 35 07.47	8.42	21 38 59.0	56.8	10.128	22.96	5 37.80	15 45.97	1 08.04	7 29 29.70
	16 7 39 10.31	11.28	+21 29 36.9	34.6	10.109	-23.88	+5 44.07	15 46.01	1 07.97	7 33 26.26
	17 7 43 12.66	13.64	21 19 52.7	50.3	10.088	24.79	5 49.87	15 46.07	1 07.90	7 37 22.81
	18 7 47 14.52	15.52	21 09 46.8	44.3	10.067	25.69	5 55.17	15 46.12	1 07.83	7 41 19.37
	19 7 51 15.88	16.88	20 59 19.4	16.7	10.046	26.59	5 59.98	15 46.17	1 07.75	7 45 15.92
	20 7 55 16.71	17.72	20 48 30.5	27.8	10.024	27.47	6 04.26	15 46.24	1 07.67	7 49 12.48
	21 7 59 17.01	18.03	+20 37 20.7	17.7	10.001	-28.34	+6 08.00	15 46.31	1 07.59	7 53 09.04
	22 8 03 16.77	17.80	20 25 50.0	47.0	9.978	29.21	6 11.20	15 46.39	1 07.51	7 57 05.59
	23 8 07 15.98	17.02	20 13 58.7	55.6	9.955	30.06	6 13.85	15 46.47	1 07.43	8 01 02.15
	24 8 11 14.62	15.66	20 01 47.1	43.9	9.932	30.90	6 15.94	15 46.56	1 07.35	8 04 58.70
	25 8 15 12.68	13.72	19 49 15.4	12.1	9.907	31.73	6 17.43	15 46.65	1 07.27	8 08 55.26
	26 8 19 10.14	11.18	+19 36 24.0	20.5	9.882	-32.55	+6 18.33	15 46.74	1 07.19	8 12 51.81
	27 8 23 07.01	8.05	19 23 13.0	9.5	9.857	33.36	6 18.64	15 46.84	1 07.10	8 16 48.37
	28 8 27 03.26	4.29	19 09 42.9	39.3	9.831	34.15	6 18.34	15 46.95	1 07.02	8 20 44.92
	29 8 30 58.90	59.92	18 55 53.8	50.1	9.806	34.93	6 17.42	15 47.06	1 06.93	8 24 41.48
	30 8 34 53.91	54.94	18 41 46.0	42.3	9.780	35.70	6 15.88	15 47.18	1 06.84	8 28 38.03
	31 8 38 48.30	49.32	+18 27 19.9	16.1	9.754	-36.47	+6 13.71	15 47.29	1 06.76	8 32 34.59
Aug.	1 8 42 42.07	43.07	18 12 35.6	31.8	9.728	37.22	6 10.92	15 47.42	1 06.67	8 36 31.14
	2 8 46 35.21	36.20	17 57 33.5	29.7	9.702	37.95	6 07.51	15 47.56	1 06.58	8 40 27.70
	3 8 50 27.73	28.71	17 42 13.9	10.0	9.676	38.67	6 03.47	15 47.70	1 06.50	8 44 24.25
	4 8 54 19.63	20.60	17 26 37.0	33.1	9.650	39.39	5 58.81	15 47.83	1 06.41	8 48 20.81
	5 8 58 10.93	11.87	+17 10 43.1	39.2	9.625	-40.09	+5 53.55	15 47.97	1 06.32	8 52 17.36
	6 9 02 01.61	2.54	16 54 32.6	28.6	9.600	40.78	5 47.67	15 48.11	1 06.24	8 56 13.92
	7 9 05 51.70	52.60	16 38 05.6	1.7	9.575	41.46	5 41.20	15 48.26	1 06.15	9 00 10.47
	8 9 09 41.18	42.06	16 21 22.5	18.6	9.550	42.13	5 34.13	15 48.40	1 06.07	9 04 07.02
	9 9 13 30.08	30.94	16 04 23.6	19.8	9.526	42.77	5 26.47	15 48.55	1 05.98	9 08 03.58
	10 9 17 18.40	19.24	+15 47 09.2	5.4	9.501	-43.41	+5 18.24	15 48.70	1 05.90	9 12 00.13
	11 9 21 06.15	6.97	15 29 39.4	35.7	9.478	44.05	5 09.43	15 48.86	1 05.81	9 15 56.69
	12 9 24 53.35	54.14	15 11 54.8	51.1	9.455	44.67	5 00.08	15 49.02	1 05.73	9 19 53.24
	13 9 28 39.99	40.75	14 53 55.5	51.9	9.433	45.27	4 50.17	15 49.18	1 05.65	9 23 49.80
	14 9 32 26.10	26.83	14 35 41.9	38.4	9.411	45.86	4 39.72	15 49.34	1 05.57	9 27 46.35
	15 9 36 11.68	12.38	+14 17 14.3	10.8	9.389	-46.44	+4 28.74	15 49.51	1 05.49	9 31 42.90
	16 9 39 56.74	57.40	+13 58 32.8	29.5	9.367	-47.01	+4 17.24	15 49.69	1 05.42	9 35 39.46

NOTE.—For mean time interval of semidiameter passing meridian, subtract 0.19^s from the sidereal interval.

FOR WASHINGTON MEAN AND APPARENT NOON.

Date.	Apparent Right Ascension.		Apparent Declination.		Hourly Motion.		Equation of Time for Apparent Noon.	Semi-diameter at Apparent Noon.	Sidereal Time of Semid. Passing Meridian.	Sidereal Time of Mean Noon.
	Mean Noon.	App. Noon.	Mean Noon.	App. Noon.	Right Ascen.	Declination.				
	h m s	s	° ' "	"	s	"	m s	' "	m s	h m s
Aug. 16	9 39 56.74	57.40	+ 13 58 32.8	29.5	9.367	-47.01	+ 4 17.24	15 49.69	1 05.42	9 35 39.46
17	9 43 41.29	41.92	13 39 38.0	34.9	9.346	47.55	4 05.25	15 49.87	1 05.34	9 39 36.01
18	9 47 25.35	25.95	13 20 30.2	27.0	9.326	48.09	3 52.76	15 50.03	1 05.27	9 43 32.56
19	9 51 08.92	9.48	13 01 09.5	6.5	9.306	48.62	3 39.76	15 50.21	1 05.19	9 47 29.12
20	9 54 52.00	52.53	12 41 36.3	33.5	9.286	49.14	3 26.30	15 50.39	1 05.12	9 51 25.67
21	9 58 34.61	35.11	+ 12 21 51.1	48.4	9.266	-49.63	+ 3 12.37	15 50.58	1 05.05	9 55 22.22
22	10 02 16.76	17.22	12 01 54.1	51.6	9.247	50.11	2 57.95	15 50.78	1 04.98	9 59 18.78
23	10 05 58.45	58.87	11 41 45.6	43.3	9.228	50.58	2 43.09	15 50.98	1 04.92	10 03 15.33
24	10 09 39.69	40.07	11 21 26.0	23.9	9.209	51.03	2 27.77	15 51.18	1 04.85	10 07 11.88
25	10 13 20.49	20.83	11 00 55.7	53.8	9.191	51.48	2 12.02	15 51.39	1 04.79	10 11 08.44
26	10 17 00.86	1.16	+ 10 40 14.9	13.2	9.174	-51.91	+ 1 55.85	15 51.61	1 04.73	10 15 04.99
27	10 20 40.81	41.06	10 19 24.0	22.6	9.157	52.32	1 39.25	15 51.83	1 04.67	10 19 01.54
28	10 24 20.35	20.56	9 58 23.4	22.2	9.140	52.72	1 22.24	15 52.05	1 04.62	10 22 58.09
29	10 27 59.50	59.67	9 37 13.5	12.5	9.124	53.11	1 04.83	15 52.27	1 04.56	10 26 54.65
30	10 31 38.28	38.40	9 15 54.3	53.5	9.108	53.48	0 47.07	15 52.49	1 04.51	10 30 51.20
31	10 35 16.69	16.76	+ 8 54 26.3	25.8	9.093	-53.84	+ 0 28.93	15 52.73	1 04.46	10 34 47.75
Sept. 1	10 38 54.77	54.79	8 32 49.8	49.7	9.079	54.18	+ 0 10.46	15 52.96	1 04.41	10 38 44.30
2	10 42 32.52	32.50	8 11 05.1	5.2	9.067	54.53	- 0 08.34	15 53.19	1 04.36	10 42 40.86
3	10 46 09.97	9.90	7 49 12.7	13.1	9.055	54.84	0 27.43	15 53.42	1 04.32	10 46 37.41
4	10 49 47.13	47.01	7 27 12.6	13.3	9.043	55.15	0 46.82	15 53.65	1 04.28	10 50 33.96
5	10 53 24.03	23.86	+ 7 05 05.3	6.3	9.032	-55.45	- 1 06.47	15 53.89	1 04.24	10 54 30.51
6	10 57 00.68	0.46	6 42 51.0	52.4	9.022	55.73	1 26.38	15 54.14	1 04.21	10 58 27.07
7	11 00 37.11	36.84	6 20 30.2	31.8	9.013	56.00	1 46.50	15 54.37	1 04.18	11 02 23.62
8	11 04 13.33	13.02	5 58 03.0	5.0	9.006	56.25	2 06.81	15 54.61	1 04.15	11 06 20.17
9	11 07 49.38	49.01	5 35 29.8	32.2	8.999	56.50	2 27.30	15 54.85	1 04.13	11 10 16.72
10	11 11 25.28	24.86	+ 5 12 51.0	53.7	8.993	-56.72	- 2 47.96	15 55.11	1 04.11	11 14 13.28
11	11 15 01.03	0.56	4 50 06.8	9.8	8.988	56.94	3 08.76	15 55.35	1 04.09	11 18 09.83
12	11 18 36.67	36.15	4 27 17.6	20.9	8.983	57.15	3 29.66	15 55.60	1 04.07	11 22 06.38
13	11 22 12.22	11.64	4 04 23.6	27.2	8.980	57.34	3 50.65	15 55.84	1 04.06	11 26 02.93
14	11 25 47.70	47.07	3 41 25.2	29.2	8.978	57.51	4 11.72	15 56.09	1 04.04	11 29 59.48
15	11 29 23.12	22.44	+ 3 18 22.6	27.0	8.976	-57.68	- 4 32.84	15 56.35	1 04.03	11 33 56.04
16	11 32 58.52	57.79	2 55 16.4	21.1	8.975	57.83	4 54.00	15 56.60	1 04.02	11 37 52.59
17	11 36 33.90	33.11	2 32 06.8	11.8	8.974	57.96	5 15.16	15 56.85	1 04.02	11 41 49.14
18	11 40 09.29	8.45	2 08 54.0	59.5	8.975	58.08	5 36.32	15 57.11	1 04.02	11 45 45.69
19	11 43 44.70	43.80	1 45 38.6	44.4	8.976	58.19	5 57.45	15 57.37	1 04.02	11 49 42.24
20	11 47 20.14	19.19	+ 1 22 20.8	26.9	8.977	-58.28	- 6 18.55	15 57.63	1 04.02	11 53 38.79
21	11 50 55.64	54.64	0 59 01.0	7.5	8.980	58.35	6 39.60	15 57.89	1 04.03	11 57 35.34
22	11 54 31.20	30.15	0 35 39.6	46.4	8.984	58.42	7 00.60	15 58.16	1 04.04	12 01 31.90
23	11 58 06.85	5.75	+ 0 12 16.9	24.0	8.987	58.47	7 21.49	15 58.43	1 04.06	12 05 28.45
24	12 01 42.61	41.45	- 0 10 66.7	59.2	8.992	58.49	7 42.28	15 58.70	1 04.07	12 09 25.00
25	12 05 18.47	17.26	- 0 34 30.8	23.0	8.997	-58.51	- 8 02.97	15 58.97	1 04.09	12 13 21.55
26	12 08 54.47	53.21	0 57 55.2	47.0	9.003	58.52	8 23.51	15 59.25	1 04.12	12 17 18.10
27	12 12 30.63	29.32	1 21 19.5	11.0	9.010	58.50	8 43.90	15 59.52	1 04.16	12 21 14.66
28	12 16 06.96	5.60	1 44 43.2	34.4	9.018	58.47	9 04.11	15 59.81	1 04.19	12 25 11.21
29	12 19 43.49	42.07	2 07 66.1	56.9	9.026	58.43	9 24.14	16 00.09	1 04.22	12 29 07.76
30	12 23 20.24	18.77	- 2 31 27.8	18.3	9.036	-58.38	- 9 43.94	16 00.37	1 04.25	12 33 04.31
Oct. 1	12 26 57.22	55.71	- 2 54 48.0	38.3	9.046	-58.30	- 10 03.51	16 00.66	1 04.29	12 37 00.86

NOTE.—For mean time interval of semidiameter passing meridian, subtract 0.18" from the sidereal interval.

FOR WASHINGTON MEAN AND APPARENT NOON.

Date.	Apparent Right Ascension.		Apparent Declination.		Hourly Motion.		Equation of Time for Apparent Noon.	Semi-diameter at Apparent Noon.	Sidereal Time of Semid. Passing Meridian.	Sidereal Time of Mean Noon.	
	Mean Noon.	App. Noon.	Mean Noon.	App. Noon.	Right Ascen.	Declination.					
	h m s	s	° ' "	"	s	"	m s	' "	m s	h m s	
Oct.	1	12 26 57.22	55.71	- 2 54 48.0	38.3	9.046	- 58.30	- 10 03.51	16 00.66	1 04.29	12 37 00.86
	2	12 30 34.47	32.90	3 17 66.4	56.3	9.057	58.22	10 22.81	16 00.94	1 04.33	12 40 57.42
	3	12 34 12.00	10.38	3 41 22.5	12.2	9.070	58.12	10 41.83	16 01.22	1 04.38	12 44 53.97
	4	12 37 49.83	48.17	4 04 36.0	25.4	9.083	58.01	11 00.55	16 01.50	1 04.43	12 48 50.52
	5	12 41 28.00	26.28	4 27 46.7	35.8	9.097	57.88	11 18.93	16 01.77	1 04.48	12 52 47.07
	6	12 45 06.52	4.75	- 4 50 54.1	42.9	9.112	- 57.74	- 11 36.97	16 02.05	1 04.53	12 56 43.62
	7	12 48 45.41	43.60	5 13 57.9	46.4	9.128	57.58	11 54.62	16 02.32	1 04.59	13 00 40.17
	8	12 52 24.70	22.84	5 36 57.7	46.0	9.146	57.40	12 11.88	16 02.60	1 04.65	13 04 36.72
	9	12 56 04.41	2.51	5 59 53.3	41.4	9.164	57.22	12 28.73	16 02.86	1 04.71	13 08 33.25
	10	12 59 44.57	42.62	6 22 44.2	32.1	9.183	57.02	12 45.12	16 03.14	1 04.77	13 12 29.83
	11	13 03 25.20	23.20	- 6 45 30.1	17.8	9.202	- 56.80	- 13 01.04	16 03.42	1 04.84	13 16 26.38
	12	13 07 06.32	4.28	7 07 70.7	58.1	9.223	56.57	13 16.48	16 03.68	1 04.91	13 20 22.94
	13	13 10 47.95	45.87	7 30 45.5	32.8	9.245	56.33	13 31.40	16 03.96	1 04.99	13 24 19.49
	14	13 14 30.11	27.99	7 53 14.2	1.4	9.268	56.06	13 45.78	16 04.22	1 05.07	13 28 16.04
	15	13 18 12.83	10.66	8 15 36.5	23.5	9.291	55.79	13 59.63	16 04.50	1 05.15	13 32 12.59
	16	13 21 56.10	53.90	- 8 37 51.9	38.8	9.315	- 55.50	- 14 12.91	16 04.76	1 05.23	13 36 09.14
	17	13 25 39.96	37.71	8 59 60.0	46.7	9.339	55.18	14 25.62	16 05.03	1 05.31	13 40 05.70
	18	13 29 24.41	22.13	9 21 60.4	47.1	9.364	54.85	14 37.72	16 05.29	1 05.40	13 44 02.25
	19	13 33 09.48	7.16	9 43 52.8	39.4	9.390	54.51	14 49.21	16 05.56	1 05.49	13 47 58.80
	20	13 36 55.16	52.81	10 05 36.8	23.3	9.416	54.15	15 00.07	16 05.83	1 05.58	13 51 55.35
	21	13 40 41.48	39.09	- 10 26 71.8	58.2	9.442	- 53.77	- 15 10.32	16 06.10	1 05.67	13 55 51.91
	22	13 44 28.44	26.02	10 48 37.6	24.0	9.470	53.36	15 19.92	16 06.37	1 05.76	13 59 48.46
	23	13 48 16.06	13.61	11 09 53.7	40.0	9.498	52.95	15 28.87	16 06.65	1 05.86	14 03 45.01
	24	13 52 04.34	1.86	11 30 59.7	46.0	9.526	52.54	15 37.13	16 06.91	1 05.96	14 07 41.57
	25	13 55 53.31	50.80	11 51 55.1	41.5	9.554	52.08	15 44.72	16 07.18	1 06.06	14 11 38.12
	26	13 59 42.97	40.44	- 12 12 39.7	26.0	9.584	- 51.62	- 15 51.62	16 07.45	1 06.17	14 15 34.67
	27	14 03 33.34	30.78	12 32 72.9	59.2	9.613	51.15	15 57.81	16 07.72	1 06.27	14 19 31.22
	28	14 07 24.42	21.84	12 53 34.4	20.8	9.643	50.64	16 03.30	16 07.98	1 06.38	14 23 27.78
	29	14 11 16.24	13.63	13 13 43.7	30.3	9.674	50.13	16 08.04	16 08.26	1 06.49	14 27 24.33
	30	14 15 08.79	6.17	13 33 40.6	27.2	9.705	49.60	16 12.05	16 08.52	1 06.60	14 31 20.89
	31	14 19 02.11	59.47	- 13 53 24.5	11.2	9.737	- 49.05	- 16 15.29	16 08.78	1 06.71	14 35 17.44
Nov.	1	14 22 56.19	53.54	14 12 55.1	41.9	9.770	48.49	16 17.78	16 09.03	1 06.82	14 39 13.99
	2	14 26 51.06	48.39	14 31 72.0	58.9	9.803	47.91	16 19.47	16 09.29	1 06.93	14 43 10.55
	3	14 30 46.71	44.03	14 51 14.7	1.8	9.836	47.31	16 20.38	16 09.54	1 07.05	14 47 07.10
	4	14 34 43.16	40.47	15 09 62.9	50.2	9.869	46.70	16 20.50	16 09.78	1 07.16	14 51 03.66
	5	14 38 40.43	37.73	- 15 28 36.2	23.7	9.903	- 46.07	- 16 19.79	16 10.02	1 07.28	14 55 00.21
	6	14 42 38.53	35.83	15 46 54.2	41.8	9.938	45.42	16 18.25	16 10.26	1 07.40	14 58 56.76
	7	14 46 37.46	34.76	16 04 56.5	44.3	9.973	44.76	16 15.88	16 10.50	1 07.51	15 02 53.32
	8	14 50 37.24	34.54	16 22 42.7	30.8	10.008	44.09	16 12.66	16 10.73	1 07.63	15 06 49.87
	9	14 54 37.88	35.18	16 40 12.4	0.7	10.044	43.39	16 08.59	16 10.96	1 07.75	15 10 46.43
	10	14 58 39.38	36.69	- 16 57 25.2	13.8	10.080	- 42.68	- 16 03.66	16 11.18	1 07.87	15 14 42.98
	11	15 02 41.75	39.06	17 14 20.9	9.7	10.116	41.95	15 57.86	16 11.41	1 07.99	15 18 39.54
	12	15 06 44.99	42.31	17 30 58.7	47.8	10.152	41.21	15 51.17	16 11.62	1 08.11	15 22 36.09
	13	15 10 49.11	46.44	17 47 18.5	7.9	10.189	40.45	15 43.62	16 11.83	1 08.23	15 26 32.64
	14	15 14 54.10	51.44	18 03 19.9	9.6	10.225	39.66	15 35.21	16 12.05	1 08.35	15 30 29.20
	15	15 18 59.93	57.29	- 18 18 62.4	52.4	10.261	- 38.87	- 15 25.93	16 12.26	1 08.47	15 34 25.76
	16	15 23 06.63	4.01	18 34 25.6	16.0	10.297	- 38.07	- 15 15.77	16 12.47	1 08.59	15 38 22.31

NOTE.—For mean time interval of semidiameter passing meridian, subtract 0.18" from the sidereal interval.

FOR WASHINGTON MEAN AND APPARENT NOON.

Date.	Apparent Right Ascension.		Apparent Declination.		Hourly Motion.		Equation of Time for Apparent Noon.	Semi-diameter at Apparent Noon.	Sidereal Time of Semid. Passing Meridian.	Sidereal Time of Mean Noon.
	Mean Noon.	App. Noon.	Mean Noon.	App. Noon.	Right Ascen.	Declination.				
	h m s	s	° ' "	"	s	"	m s	"	m s	h m s
Nov. 16	15 23 06.63	4.01	-18 34 25.6	16.0	10.297	-38.07	-15 15.77	16 12.47	1 08.59	15 38 22.31
17	15 27 14.19	11.60	18 49 29.2	19.8	10.332	37.23	15 04.79	16 12.68	1 08.70	15 42 18.87
18	15 31 22.60	20.03	19 04 12.6	3.6	10.367	36.39	14 52.95	16 12.88	1 08.82	15 46 15.42
19	15 35 31.84	29.30	19 18 35.6	26.9	10.402	35.53	14 40.27	16 13.08	1 08.94	15 50 11.98
20	15 39 41.90	39.39	19 32 37.8	29.5	10.436	34.65	14 26.77	16 13.28	1 09.05	15 54 08.53
21	15 43 52.78	50.30	-19 46 18.8	10.8	10.470	-33.76	-14 12.46	16 13.48	1 09.16	15 58 05.09
22	15 48 04.46	2.01	19 59 38.2	30.5	10.502	32.86	13 57.33	16 13.68	1 09.27	16 02 01.64
23	15 52 16.91	14.51	20 12 35.5	28.2	10.534	31.93	13 41.44	16 13.87	1 09.38	16 05 58.20
24	15 56 30.15	27.79	20 25 10.5	3.6	10.567	30.99	13 24.77	16 14.06	1 09.49	16 09 54.76
25	16 00 44.14	41.82	20 37 22.8	16.3	10.598	30.04	13 07.32	16 14.25	1 09.60	16 13 51.31
26	16 04 58.88	56.61	-20 49 12.2	6.0	10.629	-29.07	-12 49.15	16 14.43	1 09.70	16 17 47.87
27	16 09 14.35	12.13	21 00 38.1	32.3	10.659	28.09	12 30.24	16 14.61	1 09.80	16 21 44.42
28	16 13 30.54	28.37	21 11 40.4	34.9	10.689	27.10	12 10.61	16 14.78	1 09.90	16 25 40.98
29	16 17 47.42	45.30	21 22 18.6	13.4	10.718	26.09	11 50.28	16 14.95	1 10.00	16 29 37.54
30	16 22 04.98	2.92	21 32 32.6	27.7	10.745	25.07	11 29.28	16 15.11	1 10.10	16 33 34.09
Dec. 1	16 26 23.20	21.20	-21 42 21.8	17.4	10.772	-24.04	-11 07.62	16 15.28	1 10.19	16 37 30.65
2	16 30 42.07	40.13	21 51 46.2	42.1	10.799	23.00	10 45.29	16 15.44	1 10.28	16 41 27.20
3	16 34 61.56	59.69	22 00 45.4	41.6	10.825	21.94	10 22.36	16 15.60	1 10.36	16 45 23.76
4	16 39 21.66	19.86	22 09 19.1	15.6	10.850	20.88	9 58.82	16 15.74	1 10.44	16 49 20.32
5	16 43 42.36	40.62	22 17 27.1	24.0	10.874	19.80	9 34.68	16 15.88	1 10.52	16 53 16.88
6	16 48 03.63	1.96	-22 25 09.2	6.3	10.898	-18.71	-9 09.96	16 16.01	1 10.59	16 57 13.43
7	16 52 25.45	23.85	22 32 25.1	22.5	10.920	17.62	8 44.70	16 16.13	1 10.66	17 01 09.99
8	16 56 47.79	46.26	22 39 14.5	12.2	10.941	16.51	8 18.90	16 16.25	1 10.73	17 05 06.55
9	17 01 10.65	9.21	22 45 37.2	35.2	10.962	15.39	7 52.59	16 16.36	1 10.80	17 09 03.10
10	17 05 33.99	32.63	22 51 33.2	31.4	10.982	14.27	7 25.80	16 16.48	1 10.86	17 12 59.66
11	17 09 57.78	56.50	-22 57 02.1	0.6	11.000	-13.14	-6 58.56	16 16.58	1 10.91	17 16 56.22
12	17 14 22.00	20.80	23 02 03.8	2.5	11.017	12.01	6 30.90	16 16.68	1 10.97	17 20 52.77
13	17 18 46.61	45.50	23 06 38.1	37.0	11.033	10.85	6 02.84	16 16.78	1 11.02	17 24 49.33
14	17 23 11.58	10.55	23 10 45.0	44.1	11.047	9.72	5 34.41	16 16.88	1 11.06	17 28 45.89
15	17 27 36.88	35.94	23 14 24.1	23.4	11.060	8.56	5 05.66	16 16.97	1 11.10	17 32 42.44
16	17 32 02.46	1.61	-23 17 35.5	34.9	11.071	-7.40	-4 36.64	16 17.06	1 11.14	17 36 39.00
17	17 36 28.30	27.54	23 20 18.9	18.5	11.081	6.23	4 07.35	16 17.14	1 11.17	17 40 35.56
18	17 40 54.36	53.68	23 22 34.4	34.0	11.089	5.06	3 37.84	16 17.22	1 11.19	17 44 32.12
19	17 45 20.59	20.01	23 24 21.7	21.5	11.096	3.89	3 08.15	16 17.29	1 11.21	17 48 28.67
20	17 49 46.95	46.47	23 25 41.0	40.8	11.101	2.71	2 38.33	16 17.36	1 11.23	17 52 25.23
21	17 54 13.43	13.04	-23 26 31.8	31.8	11.104	-1.54	-2 08.40	16 17.43	1 11.24	17 56 21.79
22	17 58 39.97	39.67	23 26 54.6	54.5	11.106	-0.36	1 38.41	16 17.49	1 11.25	18 00 18.34
23	18 03 06.55	6.33	23 26 49.0	49.0	11.107	+0.82	1 08.38	16 17.56	1 11.25	18 04 14.90
24	18 07 33.11	32.99	23 26 15.1	15.2	11.106	2.00	0 38.37	16 17.61	1 11.25	18 08 11.46
25	18 11 59.63	59.60	23 25 13.1	13.1	11.103	3.17	0 08.40	16 17.66	1 11.25	18 12 08.02
26	18 16 26.06	26.12	-23 23 42.7	42.7	11.099	+4.35	+0 21.50	16 17.71	1 11.24	18 16 04.58
27	18 20 52.38	52.54	23 21 44.1	44.0	11.094	5.53	0 51.26	16 17.75	1 11.22	18 20 01.13
28	18 25 18.55	18.80	23 19 17.4	17.2	11.086	6.70	1 20.89	16 17.79	1 11.20	18 23 57.69
29	18 29 44.54	44.88	23 16 22.4	22.2	11.078	7.86	1 50.33	16 17.82	1 11.17	18 27 54.25
30	18 34 10.31	10.73	23 12 59.8	59.4	11.069	9.02	2 19.57	16 17.85	1 11.14	18 31 50.80
31	18 38 35.83	36.35	-23 09 09.1	8.6	11.058	+10.18	+2 48.53	16 17.87	1 11.11	18 35 47.36
32	18 43 01.09	1.69	-23 04 50.6	50.0	11.047	+11.34	+3 17.22	16 17.89	1 11.07	18 39 43.92

NOTE.—For mean time interval of semidiameter passing meridian, subtract 0.19° from the sidereal interval.

AT TRANSIT OF MOON'S CENTER OVER THE MERIDIAN OF WASHINGTON.										
Date.	Mean Time of Transit	Diff. for 1 Hour of Long.	Right Ascension of Center.	Diff. for 1 Hour of Long.	Geocentric Declination of Center.	Diff. for 1 Hour of Long.	Sid. Time of Semid. Passing Meridian.	Geocentric Semi-diameter.	Equatorial Horizontal Parallax.	Bright Limbs
	h m	m	h m s	s	° ' "		s	"	"	
Jan. 1	2 11.27	1.875	20 52 19.47	122.65	- 12 42 18.5	+ 449.9	62.85	14 49.4	54 18.5	I. S.
2	2 55.93	1.850	21 41 02.99	121.15	- 9 26 07.1	527.7	62.52	14 55.0	54 39.1	I. S.
3	3 40.21	1.844	22 29 23.41	120.81	- 5 42 46.6	585.5	62.50	15 02.5	55 06.5	I. S.
4	4 24.66	1.866	23 17 54.62	122.11	- 1 40 32.1	621.9	62.89	15 12.1	55 41.8	I. S.
5	5 10.02	1.920	0 07 20.07	125.37	+ 2 31 38.5	634.7	63.80	15 23.9	56 25.0	I. S.
6	5 57.11	2.010	0 58 29.65	130.79	+ 6 43 25.9	+ 619.0	65.23	15 37.6	57 15.1	I. S.
7	6 46.79	2.135	1 52 14.86	138.30	10 42 14.7	568.5	67.12	15 52.7	58 10.4	I. S.
8	7 39.78	2.285	2 49 20.10	147.31	14 12 27.0	474.7	69.32	16 08.3	59 07.9	I. S.
9	8 36.49	2.439	3 50 08.13	156.57	16 55 26.8	331.9	71.49	16 23.2	60 02.3	I. S.
10	9 36.60	2.563	4 54 21.45	164.05	18 31 43.9	+ 142.6	73.18	16 35.4	60 47.3	I. S.
11	10 38.97	2.621	6 00 50.55	167.58	+ 18 45 34.5	- 76.1	73.93	16 43.4	61 16.8	I. S.
12	11 41.76	2.597	7 07 44.83	166.11	17 30 55.4	- 294.0	73.57	16 46.0	61 26.0	I. S.
13	12 43.07	2.502	8 13 09.61	160.38	14 54 48.5	- 478.6	72.24	16 42.4	61 13.0	II. S.
14	13 41.56	2.369	9 15 45.27	158.40	11 15 24.2	- 608.3	70.37	16 33.2	60 39.5	II. S.
15	14 36.77	2.233	10 15 03.36	144.23	6 56 10.5	- 678.0	68.43	16 19.9	59 50.4	II. S.
16	15 28.92	2.117	11 11 17.61	137.24	+ 2 20 05.0	- 694.3	66.76	16 03.9	58 51.9	II. S.
17	16 18.64	2.032	12 05 05.71	132.09	- 2 13 41.7	- 668.4	65.52	15 47.3	57 50.6	II. S.
18	17 06.69	1.977	12 57 13.33	128.85	- 6 30 29.1	- 611.0	64.72	15 31.2	56 51.8	II. S.
19	17 53.80	1.952	13 48 24.20	127.30	- 10 19 27.2	- 530.5	64.33	15 16.9	55 59.4	II. S.
20	18 40.57	1.948	14 39 14.26	127.04	- 13 32 29.8	- 432.1	64.26	15 05.1	55 15.6	II. S.
21	19 27.40	1.956	15 30 08.43	127.56	- 16 03 20.6	- 320.0	64.34	14 55.8	54 41.8	II. S.
22	20 14.50	1.969	16 21 18.83	128.31	- 17 47 06.5	- 197.3	64.48	14 49.3	54 17.9	II. S.
23	21 01.86	1.977	17 12 44.69	128.78	- 18 40 18.1	- 67.8	64.53	14 45.3	54 03.4	II. S.
24	21 49.29	1.974	18 04 14.69	128.60	- 18 41 06.2	+ 63.8	64.41	14 43.7	53 57.4	II. S.
25	22 36.49	1.958	18 55 31.35	127.66	- 17 49 46.0	191.9	64.10	14 44.1	53 58.8	II. S.
26	23 23.19	1.932	19 46 17.48	126.11	- 16 08 48.5	+ 311.0	63.65	14 46.1	54 06.4	
28	0 09.20	1.902	20 36 22.03	124.28	- 13 42 56.7	415.7	63.16	14 49.7	54 19.5	
29	0 54.50	1.875	21 25 44.14	122.66	- 10 38 44.0	502.1	62.74	14 54.5	54 37.0	
30	1 39.28	1.859	22 14 34.82	121.74	- 7 04 04.7	567.5	62.54	15 00.5	54 59.0	I. S.
31	2 23.91	1.863	23 03 16.42	121.96	- 3 07 51.4	609.6	62.66	15 07.7	55 25.2	I. S.
Feb. 1	3 08.92	1.892	23 52 20.90	123.70	+ 1 00 18.0	+ 626.8	63.17	15 16.0	55 56.0	I. S.
2	3 54.96	1.950	0 42 27.44	127.16	5 09 55.5	616.6	64.15	15 25.7	56 31.3	I. S.
3	4 42.75	2.037	1 34 19.06	132.44	9 09 23.1	575.3	65.56	15 36.4	57 10.8	I. S.
4	5 32.97	2.151	2 28 37.16	139.31	12 45 26.3	498.6	67.32	15 48.3	57 54.2	I. S.
5	6 26.14	2.281	3 25 52.85	147.08	15 43 03.2	382.5	69.25	16 00.6	58 39.8	I. S.
6	7 22.41	2.405	4 26 14.79	154.56	+ 17 46 03.8	+ 226.0	71.03	16 12.9	59 24.6	I. S.
7	8 21.34	2.498	5 29 16.95	160.15	18 39 18.7	+ 35.7	72.30	16 23.7	60 04.5	I. S.
8	9 21.87	2.535	6 33 55.08	162.38	18 12 23.0	- 171.2	72.76	16 32.0	60 34.6	I. S.
9	10 22.52	2.509	7 38 40.66	160.79	16 23 35.3	- 369.1	72.32	16 36.3	60 50.3	I. N. S.
10	11 21.88	2.431	8 42 08.77	156.14	13 21 48.4	- 532.2	71.18	16 35.6	60 48.1	I. S.
11	12 19.03	2.328	9 43 23.41	149.95	+ 9 24 44.7	- 643.6	69.69	16 30.0	60 27.4	II. S.
12	13 13.64	2.224	10 42 05.93	143.69	4 54 36.1	- 697.8	68.18	16 19.8	59 50.0	II. S.
13	14 05.92	2.136	11 38 27.80	138.34	+ 0 13 36.0	- 699.2	66.90	16 06.3	59 00.4	II. S.
14	14 56.33	2.069	12 32 57.29	134.35	- 4 19 01.4	- 657.6	65.95	15 51.0	58 04.2	II. S.
15	15 45.44	2.026	13 26 08.07	131.75	- 8 28 10.4	- 583.5	65.35	15 35.3	57 06.9	II. S.

AT TRANSIT OF MOON'S CENTER OVER THE MERIDIAN OF WASHINGTON.

Date.	Mean Time of Transit.	Diff. for 1 Hour of Long.	Right Ascension of Center.	Diff. for 1 Hour of Long.	Geocentric Declination of Center.	Diff. for 1 Hour of Long.	Sid. Time of Semid. Passing Meridian	Geocentric Semi- diameter.	Equatorial Horizontal Parallax	Bright Limbs.
	h m	m	h m s	s	° ' "	"	s	"	"	
Feb. 15	15 45.44	2.026	13 26 08.07	131.75	8 28 10.4	-583.5	65.35	15 35.3	57 06.9	II. S.
16	16 33.74	2.002	14 18 31.07	130.33	12 02 47.0	-486.2	65.04	15 20.8	56 13.2	II. S.
17	17 21.66	1.992	15 10 30.13	129.70	14 55 04.4	-373.0	64.91	15 08.1	55 26.9	II. S.
18	18 09.41	1.988	16 02 19.72	129.47	16 59 48.3	-249.3	64.86	14 58.1	54 50.2	II. S.
19	18 57.08	1.984	16 54 04.64	129.24	18 13 43.4	-119.6	64.78	14 51.0	54 24.1	II. S.
20	19 44.62	1.976	17 45 41.43	128.75	18 35 17.9	+11.8	64.61	14 46.9	54 09.0	II. S.
21	20 31.89	1.961	18 37 01.54	127.85	18 04 40.7	140.6	64.31	14 45.6	54 04.3	II. N. S.
22	21 18.72	1.940	19 27 55.40	126.59	16 43 43.0	262.7	63.91	14 46.9	54 09.1	II. N.
23	22 05.00	1.917	20 18 16.71	125.19	14 36 00.5	373.6	63.47	14 50.3	54 21.9	II. N.
24	22 50.75	1.896	21 08 05.69	123.96	11 46 50.1	469.3	63.09	14 55.6	54 41.1	
25	23 36.10	1.885	21 57 30.90	123.27	8 23 05.5	+545.9	62.87	15 02.1	55 04.9	
27	0 21.35	1.888	22 46 49.46	123.46	4 33 09.1	599.7	62.91	15 09.6	55 32.2	
28	1 06.89	1.911	23 36 26.16	124.82	0 26 48.0	627.4	63.29	15 17.5	56 01.3	I. S.
Mar. 1	1 53.24	1.956	0 26 51.45	127.53	3 44 52.1	625.7	64.04	15 25.7	56 31.5	I. S.
2	2 40.96	2.024	1 18 38.70	131.63	7 49 28.9	591.6	65.16	15 34.1	57 02.2	I. S.
3	3 30.56	2.113	2 12 19.81	136.96	11 33 30.0	+522.4	66.57	15 42.4	57 33.0	I. S.
4	4 22.46	2.213	3 08 18.90	143.02	14 42 29.3	416.3	68.13	15 50.8	58 03.8	I. S.
5	5 16.79	2.312	4 06 44.17	148.96	17 01 51.1	274.7	69.63	15 59.0	58 33.9	I. S.
6	6 13.29	2.391	5 07 19.93	153.70	18 18 19.4	+103.4	70.79	16 06.8	59 02.4	I. S.
7	7 11.26	2.432	6 09 24.04	156.19	18 22 13.5	-85.5	71.37	16 13.6	59 27.5	I. N. S.
8	8 09.68	2.428	7 11 55.34	155.95	17 09 55.8	-274.2	71.27	16 19.0	59 46.5	I. N.
9	9 07.50	2.384	8 13 50.39	153.28	14 45 28.0	-443.2	70.55	16 21.6	59 56.8	I. N.
10	10 03.91	2.315	9 14 21.22	149.12	11 20 18.4	-575.4	69.49	16 21.4	59 55.8	I. N.
11	10 58.55	2.239	10 13 05.10	144.55	7 11 25.7	-660.6	68.32	16 17.5	59 41.9	I. N.
12	11 51.43	2.170	11 10 03.13	140.42	2 38 32.6	-695.5	67.29	16 10.4	59 15.2	I. S.
13	12 42.84	2.116	12 05 32.38	137.20	1 58 35.8	-682.7	66.48	16 00.1	58 37.6	II. S.
14	13 33.16	2.080	12 59 56.51	134.98	6 22 12.0	-629.1	65.96	15 47.7	57 52.4	II. S.
15	14 22.77	2.057	13 53 38.21	133.61	10 17 35.4	-543.2	65.67	15 34.5	57 03.7	II. S.
16	15 11.96	2.043	14 46 54.16	132.78	13 33 37.4	-433.8	65.52	15 21.4	56 15.8	II. S.
17	16 00.86	2.032	15 39 52.83	132.11	16 02 38.4	-309.4	65.42	15 09.7	55 32.6	II. S.
18	16 49.48	2.018	16 32 34.29	131.36	17 40 04.0	-177.0	65.26	14 59.9	54 56.9	II. S.
19	17 37.71	2.000	17 24 52.58	130.16	18 23 59.6	-42.8	65.00	14 52.9	54 31.0	II. S.
20	18 25.41	1.975	18 16 39.04	128.67	18 14 41.2	+88.4	64.61	14 48.7	54 15.8	II. N.
21	19 12.47	1.946	19 07 46.63	126.95	17 14 10.1	212.8	64.14	14 47.6	54 11.9	II. N.
22	19 58.84	1.919	19 58 13.19	125.30	15 25 51.7	326.8	63.66	14 49.5	54 18.8	II. N.
23	20 44.61	1.897	20 48 03.75	124.02	12 54 21.8	+428.0	63.25	14 54.1	54 35.6	II. N.
24	21 30.00	1.888	21 37 31.21	123.43	9 45 24.8	513.7	63.03	15 01.0	55 00.7	II. N.
25	22 15.35	1.894	22 26 55.85	123.81	6 06 00.2	579.8	63.07	15 09.4	55 31.9	II. N.
26	23 01.09	1.920	23 16 44.18	125.40	2 04 40.6	622.5	63.44	15 19.0	56 07.1	
27	23 47.73	1.970	0 07 26.87	128.36	2 08 11.5	636.6	64.18	15 28.9	56 43.5	
29	0 35.80	2.040	0 59 35.91	132.61	6 20 09.4	+617.1	65.28	15 38.6	57 18.8	
30	1 25.80	2.128	1 53 40.13	137.90	10 16 48.9	559.5	66.64	15 47.3	57 50.9	I. S.
31	2 18.02	2.224	2 49 58.81	143.68	13 42 21.6	461.4	68.13	15 54.8	58 18.3	I. S.
Apr. 1	3 12.51	2.314	3 48 33.93	149.08	16 20 50.4	324.8	69.52	16 00.8	58 40.5	I. S.
2	4 08.91	2.380	4 49 03.52	153.04	17 58 08.3	+157.4	70.54	16 05.5	58 57.2	I. S.

AT TRANSIT OF MOON'S CENTER OVER THE MERIDIAN OF WASHINGTON.

Date.	Mean Time of Transit.	Diff. for 1 Hour of Long.	Right Ascension of Center.	Diff. for 1 Hour of Long.	Geocentric Declination of Center.	Diff. for 1 Hour of Long.	Sid Time of Semid. Passing Meridian.	Geocentric Semi- diameter.	Equatorial Horizontal Parallax.	Bright Limbs.
	h m	m	h m s	s	° ' "	"	s	' "	' "	
Apr. 2	4 08.91	2.380	4 49 03.52	153.04	+ 17 58 08.3	+ 157.4	70.54	16 05.5	58 57.2	I. S.
3	5 06.45	2.407	5 50 41.64	154.68	18 24 26.3	- 27.4	70.99	16 08.6	59 08.7	I. N.
4	6 04.11	2.391	6 52 27.68	153.72	17 36 13.0	- 212.2	70.77	16 10.4	59 15.3	I. N.
5	7 00.94	2.340	7 53 23.39	150.63	15 37 03.1	- 379.5	70.01	16 10.7	59 16.6	I. N.
6	7 56.27	2.269	8 52 48.81	146.38	12 36 46.9	- 515.8	68.93	16 09.6	59 12.6	I. N.
7	8 49.85	2.197	9 50 29.06	142.02	+ 8 49 37.7	- 612.9	67.81	16 06.9	59 02.6	I. N.
8	9 41.81	2.136	10 46 31.70	138.35	4 32 10.4	- 667.1	66.83	16 02.3	58 45.8	I. N.
9	10 32.52	2.092	11 41 18.64	135.76	+ 0 01 41.2	- 678.3	66.11	15 55.7	58 21.9	I. N.
10	11 22.41	2.068	12 35 17.20	134.31	- 4 25 02.1	- 648.9	65.72	15 47.6	57 51.6	I. N.
11	12 11.92	2.059	13 28 52.43	133.76	- 8 32 36.4	- 583.4	65.58	15 37.9	57 16.2	II. S.
12	13 01.33	2.059	14 22 21.71	133.72	- 12 07 47.4	- 488.1	65.59	15 27.4	56 37.8	II. S.
13	13 50.75	2.059	15 15 51.63	133.72	- 15 00 08.0	- 370.5	65.64	15 17.0	55 59.2	II. S.
14	14 40.10	2.052	16 09 17.38	133.31	- 17 02 23.5	- 239.1	65.59	15 07.1	55 23.4	II. S.
15	15 29.16	2.034	17 02 25.45	132.22	- 18 10 38.8	- 101.9	65.39	14 58.9	54 53.0	II. S.
16	16 17.64	2.004	17 54 58.48	130.43	- 18 24 06.6	+ 33.8	64.99	14 52.7	54 30.3	II. N.
17	17 05.29	1.966	18 46 42.00	128.14	- 17 44 34.8	+ 162.3	64.44	14 49.0	54 16.8	II. N.
18	17 51.99	1.926	19 37 28.27	125.75	- 16 15 41.6	280.0	63.84	14 48.2	54 14.1	II. N.
19	18 37.79	1.892	20 27 20.53	123.72	- 14 02 16.3	384.7	63.30	14 50.6	54 22.6	II. N.
20	19 22.93	1.872	21 16 32.66	122.48	- 11 09 51.5	474.8	62.95	14 55.9	54 42.0	II. N.
21	20 07.79	1.870	22 05 28.34	122.40	- 7 44 37.2	548.5	62.88	15 03.9	55 11.3	II. N.
22	20 52.90	1.893	22 54 39.04	123.77	- 3 53 37.4	+ 603.3	63.17	15 14.0	55 48.8	II. N.
23	21 38.88	1.943	23 44 41.71	126.75	+ 0 14 37.1	633.8	63.89	15 25.8	56 31.9	II. N.
24	22 26.37	2.020	0 36 15.70	131.35	4 29 27.3	634.8	65.03	15 38.2	57 17.5	II. N.
25	23 16.01	2.120	1 29 58.34	137.40	8 37 30.3	598.7	66.52	15 50.3	58 01.9	
27	0 08.24	2.234	2 26 17.59	144.29	12 22 36.2	519.1	68.23	16 01.1	58 41.2	
28	1 03.22	2.345	3 25 22.16	150.96	+ 15 26 45.6	+ 394.1	69.87	16 09.5	59 12.3	I. S.
29	2 00.61	2.430	4 26 51.09	156.06	17 32 30.3	228.9	71.14	16 15.1	59 32.9	I. S.
30	2 59.49	2.467	5 29 50.19	158.30	18 26 24.0	+ 38.0	71.72	16 17.7	59 42.2	I. N.
May 1	3 58.58	2.448	6 33 02.22	157.14	18 02 24.6	- 156.8	71.51	16 17.3	59 41.0	I. N.
2	4 56.61	2.381	7 35 09.93	153.12	16 23 20.8	- 334.0	70.61	16 14.6	59 30.9	I. N.
3	5 52.67	2.288	8 35 19.28	147.52	+ 13 39 36.2	- 478.3	69.28	16 10.0	59 14.1	I. N.
4	6 46.43	2.193	9 33 10.10	141.78	10 06 08.3	- 582.0	67.86	16 04.2	58 52.6	I. N.
5	7 38.05	2.112	10 28 52.45	136.94	5 59 32.6	- 644.1	66.62	15 57.4	58 27.7	I. N.
6	8 28.02	2.056	11 22 55.56	133.56	+ 1 36 11.0	- 666.3	65.71	15 50.0	58 00.7	I. N.
7	9 16.96	2.026	12 15 56.49	131.76	- 2 48 35.5	- 651.7	65.18	15 42.1	57 31.9	I. N.
8	10 05.46	2.019	13 08 31.11	131.32	- 7 00 37.9	- 603.2	65.02	15 33.9	57 01.8	I. N.
9	10 54.00	2.027	14 01 07.57	131.82	- 10 47 07.3	- 524.5	65.11	15 25.5	56 30.7	I. N.
10	11 42.82	2.042	14 54 01.68	132.69	- 13 56 51.7	- 420.3	65.31	15 16.9	55 59.4	I. N.
11	12 31.96	2.052	15 47 14.67	133.30	- 16 20 51.1	- 296.9	65.48	15 08.8	55 29.2	II. N.
12	13 21.20	2.049	16 40 33.78	133.13	- 17 52 52.3	- 161.9	65.46	15 01.1	55 01.5	II. N.
13	14 10.17	2.029	17 33 36.51	131.93	- 18 29 58.6	- 23.8	65.21	14 54.8	54 38.0	II. N.
14	14 58.46	1.993	18 25 58.14	129.74	- 18 12 28.9	+ 109.9	64.71	14 50.0	54 20.5	II. N.
15	15 45.74	1.947	19 17 19.49	126.98	- 17 03 26.6	233.2	64.05	14 47.3	54 10.9	II. N.
16	16 31.89	1.900	20 07 32.87	124.19	- 15 07 48.4	342.5	63.38	14 47.2	54 10.3	II. N.
17	17 17.02	1.863	20 56 44.42	121.93	- 12 31 32.0	+ 436.2	62.82	14 49.8	54 19.9	II. N.

AT TRANSIT OF MOON'S CENTER OVER THE MERIDIAN OF WASHINGTON.

Date.	Mean Time of Transit.	Diff. for 1 Hour of Long.	Right Ascension of Center.	Diff. for 1 Hour of Long.	Geocentric Declination of Center.	Diff. for 1 Hour of Long.	Sid. Time of Semid. Passing Meridian.	Geocentric Semi-diameter.	Equatorial Horizontal Parallax.	Bright Limbs.
	h m	m	h m s	s	° ' "	"	s	"	"	
May 17	17 17.02	1.863	20 56 44.42	121.93	- 12 31 32.0	+ 436.2	62.82	14 49.8	54 19.9	II. N.
18	18 01.44	1.843	21 45 13.66	120.74	- 9 21 00.6	513.7	62.53	14 55.4	54 40.4	II. N.
19	18 45.67	1.847	22 33 31.23	121.02	- 5 42 54.3	574.0	62.60	15 03.9	55 11.3	II. N.
20	19 30.36	1.882	23 22 16.33	123.08	- 1 44 28.3	614.8	63.10	15 14.9	55 51.8	II. N.
21	20 16.26	1.949	0 12 14.22	127.09	+ 2 25 46.8	632.0	64.11	15 28.0	56 40.1	II. N.
22	21 04.15	2.048	1 04 12.38	133.07	+ 6 37 07.9	+ 619.0	65.59	15 42.5	57 33.2	II. N.
23	21 54.78	2.175	1 58 54.77	140.69	10 35 47.5	567.2	67.45	15 57.1	58 26.9	II. N.
24	22 48.64	2.315	2 56 51.89	149.10	14 04 35.5	468.7	69.48	16 10.6	59 16.4	II. N.
25	23 45.78	2.443	3 58 06.40	156.83	16 44 08.2	321.1	71.30	16 21.5	59 56.4	
27	0 45.56	2.589	5 01 59.69	162.02	18 16 01.1	+ 132.7	72.53	16 28.7	60 22.6	
28	1 46.64	2.548	6 07 10.86	163.16	+ 18 27 43.4	- 75.4	72.84	16 31.4	60 32.6	I. N.
29	2 47.31	2.497	7 11 57.50	160.06	17 16 51.5	- 275.2	72.17	16 29.7	60 26.4	I. N.
30	3 46.08	2.396	8 14 50.02	153.96	14 51 53.2	- 442.6	70.78	16 24.1	60 05.9	I. N.
31	4 42.12	2.274	9 14 58.36	146.70	11 28 56.8	- 564.0	69.07	16 15.6	59 34.9	I. N.
June 1	5 35.33	2.162	10 12 15.96	139.95	7 27 08.6	- 637.2	67.45	16 05.6	58 57.6	I. N.
2	6 26.12	2.075	11 07 08.18	134.69	+ 3 04 59.1	- 666.7	66.11	15 54.5	58 17.4	I. N.
3	7 15.18	2.019	12 00 16.33	131.30	- 1 21 14.1	- 658.5	65.23	15 43.7	57 37.4	I. N.
4	8 03.25	1.992	12 52 25.22	129.72	- 5 37 33.1	- 618.1	64.77	15 33.3	56 59.3	I. N.
5	8 51.00	1.990	13 44 14.64	129.60	- 9 31 57.5	- 549.6	64.69	15 23.7	56 24.0	I. N.
6	9 38.91	2.004	14 36 13.68	130.42	- 12 53 58.2	- 456.7	64.84	15 14.9	55 51.7	I. N.
7	10 27.22	2.022	15 28 36.93	131.50	- 15 34 37.8	- 343.6	65.07	15 07.0	55 22.9	I. N.
8	11 15.91	2.034	16 21 22.90	132.20	- 17 26 51.5	- 215.6	65.22	15 00.2	54 57.6	I. N.
9	12 04.71	2.030	17 14 15.42	132.00	- 18 26 04.0	- 79.8	65.15	14 54.3	54 36.2	II. N.
10	12 53.20	2.007	18 06 49.09	130.63	- 18 30 40.7	+ 56.1	64.82	14 49.7	54 19.2	II. N.
11	13 40.93	1.968	18 58 37.53	128.27	- 17 42 10.8	184.6	64.25	14 46.5	54 07.6	II. N.
12	14 27.60	1.920	19 49 21.60	125.36	- 16 04 42.5	+ 300.2	63.55	14 45.1	54 02.4	II. N.
13	15 13.08	1.872	20 38 54.97	122.49	- 13 44 10.9	399.5	62.85	14 45.7	54 04.6	II. N.
14	15 57.54	1.835	21 27 26.17	120.28	- 10 47 25.6	481.3	62.32	14 48.6	54 15.4	II. N.
15	16 41.33	1.818	22 15 17.49	119.24	- 7 21 34.4	545.0	62.09	14 54.1	54 35.7	II. N.
16	17 25.02	1.826	23 03 02.64	119.83	- 3 33 53.4	590.3	62.28	15 02.4	55 06.0	II. N.
17	18 09.32	1.869	23 51 24.28	122.33	+ 0 27 57.9	+ 615.3	62.95	15 13.3	55 46.0	II. N.
18	18 55.03	1.946	0 41 11.22	126.95	4 35 13.8	616.5	64.16	15 26.6	56 34.8	II. N.
19	19 43.02	2.058	1 33 14.86	133.69	8 37 05.9	587.1	65.86	15 41.8	57 30.4	II. N.
20	20 34.07	2.200	2 28 22.65	142.19	12 19 46.2	519.1	67.94	15 57.7	58 29.1	II. N.
21	21 28.71	2.354	3 27 06.61	151.48	15 26 03.7	404.2	70.15	16 13.3	59 26.1	II. N.
22	22 26.94	2.493	4 29 26.46	159.85	+ 17 36 36.6	+ 240.6	72.09	16 26.8	60 15.7	II. N.
23	23 27.97	2.582	5 34 34.76	165.17	18 33 27.7	+ 38.6	73.30	16 36.6	60 51.6	
25	0 30.23	2.594	6 40 57.58	165.90	18 05 39.3	- 177.4	73.46	16 41.3	61 09.1	
26	1 31.85	2.530	7 46 41.23	162.06	16 13 51.0	- 376.0	72.60	16 40.6	61 06.3	I. N.
27	2 31.26	2.416	8 50 12.20	155.19	13 10 35.9	- 531.4	71.03	16 34.5	60 44.1	I. N.
28	3 27.68	2.287	9 50 43.40	147.41	+ 9 16 03.5	- 631.8	69.21	16 24.3	60 06.7	I. N.
29	4 21.11	2.170	10 48 14.38	140.39	4 52 19.4	- 678.4	67.53	16 11.4	59 19.4	I. N.
30	5 12.05	2.081	11 43 15.58	135.02	+ 0 19 25.4	- 679.2	66.22	15 57.4	58 27.6	I. N.
July 1	6 01.23	2.023	12 36 31.07	131.58	- 4 06 10.1	- 643.4	65.34	15 43.2	57 35.9	I. N.
2	6 49.40	1.996	13 28 45.98	129.92	- 8 11 23.5	- 578.4	64.91	15 30.1	56 47.6	I. N.

AT TRANSIT OF MOON'S CENTER OVER THE MERIDIAN OF WASHINGTON.

Date.	Mean Time of Transit	Diff. for 1 Hour of Long	Right Ascension of Center.	Diff. for 1 Hour of Long.	Geocentric Declination of Center.	Diff. for 1 Hour of Long.	Sid. Time of Semid. Passing Meridian	Geocentric Semi- diameter.	Equatorial Horizontal Parallax.	Bright Limbs.
	h m	m	h m s	s	° ' "	"	s	"	"	
July 2	6 49.40	1.996	13 28 45.98	129.92	- 8 11 23.5	- 578.4	64.91	15 30.1	56 47.6	I. N.
3	7 37.21	1.991	14 20 38.45	129.63	- 11 45 50.7	- 490.2	64.79	15 18.4	56 04.8	I. N.
4	8 25.07	1.999	15 12 34.88	130.15	- 14 41 06.2	- 383.1	64.87	15 08.5	55 28.3	I. N.
5	9 13.20	2.011	16 04 47.09	130.84	- 16 50 25.9	- 261.3	64.99	15 00.3	54 58.2	I. N.
6	10 01.54	2.015	16 57 11.63	131.09	- 18 08 58.6	- 130.2	65.00	14 53.9	54 34.6	I. N.
7	10 49.81	2.005	17 49 32.48	130.47	- 18 34 08.9	+ 4.4	64.79	14 49.0	54 16.9	I. N.
8	11 37.64	1.978	18 41 26.56	128.86	- 18 06 00.0	135.4	64.34	14 45.7	54 04.9	I. N.
9	12 24.65	1.938	19 32 31.69	126.46	- 16 47 15.9	256.4	63.72	14 44.0	53 58.5	II. N.
10	13 10.61	1.892	20 22 33.41	123.69	- 14 42 57.6	362.4	63.01	14 43.8	53 57.9	II. N.
11	13 55.48	1.849	21 11 29.54	121.09	- 11 59 40.8	450.8	62.37	14 45.3	54 03.5	II. N.
12	14 39.45	1.818	21 59 31.33	119.24	- 8 44 53.0	+ 520.0	61.93	14 48.7	54 15.9	II. N.
13	15 22.90	1.807	22 47 02.40	118.60	- 5 06 20.3	569.4	61.82	14 54.1	54 35.9	II. N.
14	16 06.41	1.823	23 34 36.72	119.36	- 1 12 03.2	598.5	62.14	15 01.9	55 04.1	II. N.
15	16 50.67	1.871	0 22 56.23	122.41	+ 2 49 35.4	605.8	62.94	15 11.9	55 40.8	II. N.
16	17 36.48	1.952	1 12 48.45	127.30	6 49 13.5	587.7	64.24	15 24.1	56 25.7	II. N.
17	18 24.64	2.067	2 05 02.46	134.19	+ 10 35 41.9	+ 538.9	66.01	15 38.3	57 17.9	II. N.
18	19 15.89	2.208	3 00 22.38	142.67	13 55 23.1	452.6	68.11	15 53.9	58 15.0	II. N.
19	20 10.68	2.358	3 59 15.56	151.73	16 31 55.7	322.6	70.28	16 09.7	59 13.1	II. N.
20	21 08.94	2.491	5 01 37.11	159.71	18 07 37.5	+ 149.3	72.12	16 24.4	60 06.8	II. N.
21	22 09.83	2.573	6 06 37.16	164.63	18 27 03.8	- 55.9	73.22	16 36.2	60 50.0	II. N.
22	23 11.84	2.582	7 12 44.60	165.22	+ 17 22 00.3	- 268.0	73.30	16 43.4	61 16.7	
24	0 13.22	2.522	8 18 13.79	161.61	14 55 46.0	- 456.7	72.46	16 45.1	61 22.7	
25	1 12.56	2.418	9 21 40.50	155.32	11 23 06.0	- 597.1	70.99	16 40.7	61 06.9	I. N.
26	2 09.17	2.301	10 22 23.52	148.26	7 05 56.0	- 678.6	69.34	16 31.3	60 32.2	I. N.
27	3 03.08	2.195	11 20 23.16	141.89	+ 2 27 49.1	- 703.1	67.83	16 18.0	59 43.3	I. N.
28	3 54.72	2.113	12 16 06.56	136.98	- 2 10 12.3	- 680.0	66.65	16 02.4	58 46.7	I. N.
29	4 44.73	2.059	13 10 12.02	133.72	- 6 31 17.1	- 620.2	65.88	15 46.7	57 48.2	I. N.
30	5 33.74	2.029	14 03 17.53	131.94	- 10 22 45.8	- 533.3	65.43	15 31.4	56 52.5	I. N.
31	6 22.27	2.017	14 55 53.73	131.20	- 13 35 22.1	- 426.9	65.25	15 17.9	56 02.8	I. N.
Aug. 1	7 10.64	2.014	15 48 20.04	131.02	- 16 02 25.6	- 306.4	65.18	15 06.6	55 21.2	I. N.
2	7 58.95	2.011	16 40 43.12	130.86	- 17 39 23.5	- 177.2	65.08	14 57.6	54 48.3	I. N.
3	8 47.12	2.001	17 32 57.81	130.26	- 18 23 43.6	- 44.3	64.87	14 51.0	54 24.1	I. N.
4	9 34.92	1.980	18 24 50.56	129.00	- 18 15 00.7	+ 87.1	64.48	14 46.7	54 08.2	I. N.
5	10 22.09	1.948	19 16 04.73	127.08	- 17 15 02.2	211.2	63.92	14 44.4	53 59.8	I. N.
6	11 08.38	1.909	20 06 26.78	124.72	- 15 27 41.9	323.1	63.26	14 43.9	53 58.0	I. N.
7	11 53.72	1.869	20 55 50.87	122.33	- 12 58 41.4	+ 419.0	62.61	14 45.1	54 02.2	I. II. N.
8	12 38.17	1.836	21 44 21.51	120.34	- 9 55 01.9	496.0	62.10	14 47.7	54 12.0	II. N.
9	13 21.98	1.817	22 32 13.86	119.20	- 6 24 35.5	552.7	61.81	14 51.8	54 27.1	II. N.
10	14 05.56	1.819	23 19 52.70	119.27	- 2 35 47.5	587.8	61.87	14 57.4	54 47.8	II. N.
11	14 49.47	1.845	0 07 50.73	120.85	+ 1 22 30.5	599.9	62.35	15 04.7	55 14.3	II. N.
12	15 34.33	1.899	0 56 46.51	124.10	+ 5 20 50.6	+ 587.4	63.27	15 13.5	55 46.8	II. N.
13	16 20.85	1.982	1 47 21.67	129.11	9 08 49.2	547.4	64.63	15 24.0	56 25.5	II. N.
14	17 09.69	2.092	2 40 16.93	135.73	12 34 36.7	475.9	66.36	15 36.2	57 10.0	II. N.
15	18 01.40	2.219	3 36 04.80	143.38	15 24 43.4	368.5	68.27	15 49.5	57 59.0	II. N.
16	18 56.22	2.347	4 34 59.50	151.07	+ 17 24 19.5	+ 223.3	70.14	16 03.6	58 50.2	II. N.

AT TRANSIT OF MOON'S CENTER OVER THE MERIDIAN OF WASHINGTON.

Date.	Mean Time of Transit.	Diff. for 1 Hour of Long.	Right Ascension of Center.	Diff. for 1 Hour of Long.	Geocentric Declination of Center.	Diff. for 1 Hour of Long.	Sid Time of Semid. Passing Meridian.	Geocentric Semi-diameter.	Equatorial Horizontal Parallax.	Bright Limbs.
	h m	m	h m s	s	° ' "	"	s	"	"	
Aug. 16	18 56.22	2.347	4 34 59.50	151.07	+ 17 24 19.5	+ 223.3	70.14	16 03.6	58 50.2	II. N.
17	19 53.89	2.452	5 36 45.59	157.40	18 18 52.3	+ 44.5	71.61	16 17.0	59 39.8	II. N.
18	20 53.57	2.511	6 40 32.51	160.95	17 57 15.5	- 154.4	72.38	16 28.6	60 22.5	II. N.
19	21 53.97	2.512	7 45 02.97	161.00	16 15 40.0	- 351.0	72.33	16 37.0	60 53.1	II. S.
20	22 53.74	2.462	8 48 55.65	157.96	13 20 11.2	- 519.7	71.57	16 40.7	61 06.7	II. S.
21	23 51.88	2.380	9 51 10.08	153.06	+ 9 26 20.9	- 640.2	70.38	16 39.0	61 00.5	
23	0 47.93	2.291	10 51 18.71	147.69	4 55 44.0	- 703.0	69.10	16 32.0	60 34.8	
24	1 41.92	2.211	11 49 23.86	142.89	+ 0 11 30.1	- 709.3	67.96	16 20.5	59 52.7	I. N.
25	2 34.21	2.149	12 45 46.10	139.17	- 4 25 14.4	- 667.2	67.09	16 06.0	58 59.5	I. N.
26	3 25.23	2.106	13 40 52.55	136.55	- 8 37 24.0	- 588.2	66.50	15 50.2	58 01.2	I. N.
27	4 15.41	2.078	14 35 07.97	134.85	- 12 12 21.1	- 483.0	66.12	15 34.4	57 03.5	I. N.
28	5 05.03	2.058	15 28 49.79	133.68	- 15 01 30.7	- 360.7	65.87	15 20.1	56 10.6	I. N.
29	5 54.22	2.041	16 22 05.86	132.65	- 16 59 37.8	- 228.8	65.61	15 07.7	55 25.5	I. N.
30	6 42.96	2.020	17 14 55.02	131.40	- 18 04 11.9	- 93.8	65.27	14 58.0	54 49.8	I. N.
31	7 31.13	1.993	18 07 09.75	129.76	- 18 14 58.4	+ 39.3	64.81	14 51.1	54 24.5	I. N.
Sept. 1	8 18.57	1.959	18 58 40.10	127.71	- 17 33 41.5	+ 165.8	64.22	14 47.0	54 09.2	I. S.
2	9 05.13	1.921	19 49 18.31	125.45	- 16 03 48.4	281.7	63.56	14 45.3	54 03.3	I. S.
3	9 50.79	1.884	20 39 01.97	123.23	- 13 50 14.5	383.6	62.91	14 46.0	54 05.6	I. S.
4	10 35.64	1.854	21 27 56.56	121.41	- 10 59 09.3	468.8	62.37	14 48.5	54 15.0	I. S.
5	11 19.89	1.836	22 16 15.40	120.31	- 7 37 45.3	534.8	62.05	14 52.6	54 30.1	I. S.
6	12 03.89	1.834	23 04 19.47	120.23	- 3 54 10.7	+ 579.4	62.01	14 58.0	54 50.0	I. II. N.
7	12 48.10	1.853	23 52 35.90	121.37	+ 0 02 34.9	600.3	62.33	15 04.5	55 13.6	II. N.
8	13 33.04	1.895	0 41 36.28	123.90	4 02 36.7	595.3	63.04	15 11.9	55 40.6	II. N.
9	14 19.27	1.961	1 31 54.37	127.83	7 55 02.7	561.9	64.11	15 20.0	56 10.5	II. N.
10	15 07.34	2.048	2 24 02.72	133.05	11 27 59.4	497.4	65.52	15 28.9	56 43.3	II. N.
11	15 57.68	2.149	3 18 27.67	139.14	+ 14 28 36.8	+ 400.0	67.13	15 38.6	57 18.6	II. N.
12	16 50.50	2.253	4 15 22.43	145.38	16 43 35.0	269.4	68.71	15 48.7	57 56.1	II. N.
13	17 45.70	2.343	5 14 39.88	150.83	18 00 09.7	+ 109.1	70.06	15 59.2	58 34.4	II. N.
14	18 42.74	2.404	6 15 48.51	154.50	18 08 06.9	- 71.7	70.92	16 09.4	59 11.7	II. N. S.
15	19 40.77	2.425	7 17 56.47	155.74	17 02 06.8	- 257.6	71.18	16 18.5	59 45.2	II. S.
16	20 38.81	2.406	8 20 04.58	154.58	+ 14 43 46.9	- 429.9	70.85	16 25.5	60 10.7	II. S.
17	21 36.02	2.359	9 21 23.09	151.75	11 22 22.8	- 570.3	70.10	16 29.2	60 24.5	II. S.
18	22 31.92	2.300	10 21 23.21	148.22	7 13 42.0	- 664.7	69.20	16 29.0	60 23.6	II. S.
19	23 26.42	2.244	11 19 58.71	144.83	+ 2 37 40.3	- 706.5	68.33	16 24.3	60 06.9	
21	0 19.69	2.198	12 17 19.86	142.07	- 2 04 31.0	- 696.0	67.67	16 15.8	59 35.2	
22	1 12.01	2.164	13 13 44.14	140.07	- 6 33 01.0	- 639.4	67.20	16 03.9	58 51.7	I. N.
23	2 03.65	2.141	14 09 28.01	138.65	- 10 31 08.6	- 546.0	66.90	15 50.0	58 00.8	I. N.
24	2 54.79	2.121	15 04 41.27	137.46	- 13 46 21.9	- 426.7	66.66	15 35.5	57 07.4	I. N.
25	3 45.44	2.099	15 59 24.80	136.11	- 16 10 29.5	- 292.2	66.39	15 21.6	56 16.3	I. N.
26	4 35.47	2.069	16 53 31.36	134.34	- 17 39 22.8	- 151.8	65.99	15 09.3	55 31.5	I. N.
27	5 24.69	2.031	17 46 49.28	132.07	- 18 12 13.4	- 13.2	65.44	14 59.5	54 55.3	I. N.
28	6 12.91	1.986	18 39 07.06	129.38	- 17 50 55.8	+ 118.1	64.75	14 52.4	54 29.3	I. S.
29	7 00.02	1.939	19 30 17.92	126.54	- 16 39 13.2	238.3	63.98	14 48.3	54 14.4	I. S.
30	7 46.03	1.896	20 20 22.68	123.92	- 14 42 03.0	345.1	63.25	14 47.2	54 10.2	I. S.
Oct. 1	8 31.10	1.862	21 09 30.69	121.87	- 12 05 13.3	+ 436.4	62.65	14 48.8	54 16.1	I. S.

AT TRANSIT OF MOONS CENTER OVER THE MERIDIAN OF WASHINGTON.

Date.	Mean Time of Transit.	Diff. for 1 Hour of Long.	Right Ascension of Center.	Diff. for 1 Hour of Long.	Geocentric Declination of Center.	Diff. for 1 Hour of Long.	Sid. Time of Semid. Passing Meridian.	Geocentric Semi-diameter.	Equatorial Horizontal Parallax.	Bright Limbs.
	h m	m	h m s	s	° ' "	"	s	"	"	
Oct. 1	8 31.10	1.862	21 09 30.69	121.87	- 12 05 13.3	+ 436.4	62.65	14 48.8	54 16.1	I. S.
2	9 15.51	1.842	21 57 59.23	120.68	- 8 55 11.9	510.7	62.26	14 52.7	54 30.5	I. S.
3	9 59.66	1.841	22 46 12.33	120.61	- 5 19 11.7	565.9	62.19	14 58.7	54 52.2	I. S.
4	10 44.04	1.861	23 34 38.96	121.83	- 1 25 24.7	599.1	62.46	15 05.9	55 19.0	I. S.
5	11 29.18	1.904	0 23 51.13	124.42	+ 2 36 40.8	666.8	63.10	15 14.0	55 48.9	I. S.
6	12 15.62	1.969	1 14 21.43	128.32	+ 6 36 05.8	+ 585.0	64.13	15 22.7	56 20.5	II. N.
7	13 03.84	2.053	2 06 39.60	133.34	10 20 18.0	530.1	65.45	15 31.3	56 52.0	II. N.
8	13 54.23	2.147	3 01 07.41	139.03	13 35 31.1	439.9	66.94	15 39.6	57 22.2	II. N.
9	14 46.89	2.240	3 57 52.22	144.62	16 07 35.1	314.8	68.38	15 47.2	57 50.6	II. N.
10	15 41.61	2.316	4 56 41.28	149.22	17 43 24.4	+ 159.9	69.57	15 54.4	58 16.6	II. N.
11	16 37.83	2.362	5 57 00.00	151.98	+ 18 12 55.5	- 14.5	70.28	16 00.8	58 40.3	II. N.
12	17 34.70	2.370	6 57 57.99	152.47	17 31 06.6	- 194.0	70.42	16 06.4	59 01.1	II. S.
13	18 31.34	2.345	7 58 42.29	150.92	15 39 09.0	- 362.5	70.04	16 11.0	59 17.9	II. S.
14	19 27.07	2.298	8 58 32.24	148.09	12 44 27.6	- 505.5	69.33	16 14.3	59 29.6	II. S.
15	20 21.58	2.245	9 57 08.15	144.92	8 59 33.9	- 612.2	68.49	16 15.5	59 34.4	II. S.
16	21 14.88	2.199	10 54 31.45	142.15	+ 4 40 30.0	- 675.6	67.76	16 14.5	59 30.5	II. S.
17	22 07.25	2.168	11 50 58.48	140.26	+ 0 5 14.6	- 692.9	67.23	16 10.6	59 16.4	II. S.
18	22 59.05	2.152	12 46 51.65	139.32	- 4 27 47.7	- 664.9	66.96	16 04.0	58 52.1	II. S.
19	23 50.62	2.148	13 42 31.12	139.07	- 8 41 06.6	- 595.1	66.88	15 54.8	58 18.4	
21	0 42.15	2.147	14 38 08.12	139.02	- 12 19 27.5	- 491.3	66.89	15 43.8	57 38.0	
22	1 33.63	2.141	15 33 41.35	138.65	- 15 10 59.8	- 363.0	66.84	15 31.8	56 54.0	I. N.
23	2 24.80	2.121	16 28 56.99	137.49	- 17 08 03.3	- 220.9	66.62	15 19.9	56 10.0	I. N.
24	3 15.32	2.085	17 23 32.97	135.34	- 18 07 20.5	- 75.8	66.15	15 08.9	55 29.7	I. N.
25	4 04.80	2.035	18 17 06.17	132.31	- 18 09 29.3	+ 63.5	65.44	14 59.7	54 56.1	I. S.
26	4 52.95	1.977	19 09 19.72	128.79	- 17 18 04.9	191.2	64.59	14 53.1	54 31.6	I. S.
27	5 39.68	1.919	20 00 07.94	125.29	- 15 38 32.6	+ 303.9	63.70	14 49.2	54 17.2	I. S.
28	6 25.11	1.870	20 49 37.87	122.34	- 13 17 09.2	400.3	62.91	14 48.3	54 14.2	I. S.
29	7 09.55	1.837	21 38 08.18	120.39	- 10 20 28.4	480.3	62.36	14 50.5	54 22.3	I. S.
30	7 53.47	1.826	22 26 06.61	119.73	- 6 55 12.9	543.1	62.14	14 55.5	54 40.7	I. S.
31	8 37.42	1.841	23 14 07.47	120.61	- 3 08 31.0	587.1	62.31	15 03.0	55 08.2	I. S.
Nov. 1	9 22.05	1.883	0 02 49.10	123.14	+ 0 51 33.2	+ 609.2	62.91	15 12.4	55 42.6	I. S.
2	10 08.01	1.952	0 52 51.22	127.30	4 55 19.2	604.6	63.94	15 23.0	56 21.7	I. S.
3	10 55.94	2.045	1 44 51.09	132.90	8 50 58.9	567.7	65.34	15 34.0	57 02.1	I. S.
4	11 46.30	2.154	2 39 17.80	139.43	12 24 25.6	492.9	66.98	15 44.6	57 40.7	I. S.
5	12 39.32	2.263	3 36 24.04	146.01	15 19 52.3	377.7	68.61	15 53.8	58 14.9	II. N. S.
6	13 34.78	2.354	4 35 57.32	151.46	+ 17 21 36.6	+ 225.4	69.98	16 01.4	58 42.5	II. N. S.
7	14 31.98	2.406	5 37 15.81	154.60	18 16 46.4	+ 47.3	70.80	16 06.8	59 02.2	II. S.
8	15 29.87	2.409	6 39 14.74	154.79	17 58 19.7	- 139.2	70.92	16 09.9	59 13.9	II. S.
9	16 27.26	2.368	7 40 44.51	152.30	16 26 50.5	- 314.7	70.37	16 11.2	59 18.3	II. S.
10	17 23.26	2.298	8 40 51.70	148.13	13 50 07.0	- 463.3	69.38	16 10.6	59 16.5	II. S.
11	18 17.50	2.222	9 39 11.39	143.56	+ 10 21 05.2	- 575.2	68.26	16 08.7	59 09.5	II. S.
12	19 10.04	2.157	10 35 47.54	139.63	6 15 22.1	- 646.5	67.27	16 05.6	58 57.9	II. S.
13	20 01.24	2.113	11 31 04.10	136.98	+ 1 49 22.3	- 676.7	66.56	16 01.4	58 42.2	II. S.
14	20 51.66	2.093	12 25 34.64	135.80	- 2 40 36.7	- 666.7	66.20	15 55.8	58 22.1	II. S.
15	21 41.88	2.094	13 19 52.40	135.86	- 6 58 54.4	- 618.6	66.16	15 49.2	57 57.6	II. S.

AT TRANSIT OF MOON'S CENTER OVER THE MERIDIAN OF WASHINGTON.

Date.	Mean Time of Transit	Diff. for 1 Hour of Long.	Right Ascension of Center.	Diff. for 1 Hour of Long.	Geocentric Declination of Center.	Diff. for 1 Hour of Long.	Sid. Time of Semid. Passing Meridian.	Geocentric Semi- diameter.	Equatorial Horizontal Parallax.	Bright Limbs.
	h m	m	h m s	s	° ' "	"	"	"	"	
Nov. 15	21 41.88	2.094	13 19 52.40	135.86	- 6 58 54.4	- 618.6	66.16	15 49.2	57 57.6	II. S.
16	22 32.30	2.108	14 14 22.38	136.71	- 10 50 52.6	- 535.7	66.32	15 41.3	57 28.8	II. S.
17	23 23.10	2.124	15 09 15.46	137.68	- 14 03 36.3	- 423.5	66.54	15 32.5	56 56.4	
19	0 14.19	2.130	16 04 25.46	138.02	- 16 26 51.4	- 290.0	66.64	15 23.1	56 22.0	
20	1 05.18	2.116	16 59 30.31	137.18	- 17 54 05.3	- 145.2	66.45	15 13.7	55 47.3	
21	1 55.58	2.079	17 53 58.59	134.96	- 18 22 58.5	+ 0.1	65.94	15 04.8	55 14.8	I. S.
22	2 44.84	2.024	18 47 19.24	131.60	- 17 55 14.7	136.6	65.15	14 57.1	54 46.9	I. S.
23	3 32.63	1.958	19 39 10.94	127.65	- 16 35 45.1	258.1	64.21	14 51.4	54 25.7	I. S.
24	4 18.84	1.894	20 29 27.52	123.80	- 14 31 08.6	361.8	63.26	14 48.1	54 13.5	I. S.
25	5 03.63	1.842	21 18 18.94	120.66	- 11 48 44.2	447.2	62.47	14 47.5	54 11.4	I. S.
26	5 47.40	1.810	22 06 08.95	118.74	- 8 35 46.6	+ 514.8	61.98	14 50.0	54 20.2	I. S.
27	6 30.72	1.805	22 53 31.70	118.44	- 4 59 18.0	564.8	61.89	14 55.4	54 40.2	I. S.
28	7 14.27	1.830	23 41 08.60	119.97	- 1 06 25.9	596.3	62.26	15 03.7	55 10.9	I. S.
29	7 58.82	1.888	0 29 45.67	123.46	+ 2 54 54.6	606.4	63.14	15 14.6	55 50.9	I. S.
30	8 45.17	1.979	1 20 10.40	128.90	6 55 10.2	589.8	64.50	15 27.3	56 37.5	I. S.
Dec. 1	9 34.03	2.097	2 13 07.01	136.04	+ 10 42 16.3	+ 539.4	66.26	15 41.1	57 28.0	I. S.
2	10 25.97	2.232	3 09 08.28	144.15	14 01 14.2	448.1	68.24	15 54.6	58 17.9	I. S.
3	11 21.13	2.364	4 08 23.48	151.95	16 34 51.6	312.7	70.10	16 06.9	59 02.6	I. S.
4	12 19.06	2.459	5 10 26.25	157.81	18 06 08.2	+ 138.2	71.48	16 16.4	59 37.7	II. S.
5	13 18.71	2.500	6 14 10.74	160.23	18 22 19.7	- 59.1	72.08	16 22.4	59 59.9	II. S.
6	14 18.53	2.475	7 18 06.02	158.73	+ 17 19 03.5	- 254.8	71.79	16 24.6	60 07.8	II. S.
7	15 17.08	2.398	8 20 45.48	154.14	15 01 56.7	- 424.9	70.77	16 23.1	60 02.1	II. S.
8	16 13.45	2.297	9 21 13.56	148.09	11 44 42.9	- 553.8	69.36	16 18.4	59 45.0	II. S.
9	17 07.39	2.199	10 19 15.08	142.18	7 45 15.1	- 656.1	67.94	16 11.5	59 19.9	II. S.
10	17 59.18	2.121	11 15 07.75	137.48	+ 3 22 01.4	- 673.1	66.79	16 03.4	58 49.9	II. S.
11	18 49.44	2.072	12 09 28.11	134.51	- 1 07 53.4	- 670.1	66.03	15 54.6	58 17.6	II. S.
12	19 38.87	2.052	13 02 58.54	133.30	- 5 29 20.5	- 631.6	65.68	15 45.7	57 44.8	II. S.
13	20 28.11	2.055	13 56 17.47	133.47	- 9 28 56.0	- 561.5	65.67	15 36.8	57 12.4	II. S.
14	21 17.61	2.072	14 49 52.27	134.50	- 12 54 51.1	- 463.8	65.86	15 28.3	56 41.0	II. S.
15	22 07.56	2.090	15 43 54.22	135.62	- 15 36 59.3	- 343.5	66.09	15 20.1	56 10.7	II. S.
16	22 57.85	2.098	16 38 16.25	136.05	- 17 27 34.0	- 207.4	66.15	15 12.1	55 41.7	II. S.
17	23 48.08	2.085	17 32 35.10	135.28	- 18 21 56.9	- 64.1	65.94	15 04.7	55 14.5	
19	0 37.72	2.048	18 26 18.34	133.10	- 18 19 13.7	+ 76.6	65.39	14 58.0	54 50.1	
20	1 26.25	1.993	19 18 54.52	129.77	- 17 22 09.6	206.4	64.58	14 52.4	54 29.3	I. S.
21	2 13.31	1.928	20 10 02.51	125.86	- 15 36 24.5	319.3	63.63	14 48.2	54 13.7	I. S.
22	2 58.82	1.865	20 59 36.86	122.08	- 13 09 20.3	+ 412.6	62.70	14 45.8	54 05.0	I. S.
23	3 42.95	1.815	21 47 48.39	119.06	- 10 08 54.7	486.2	61.96	14 45.6	54 04.5	I. S.
24	4 26.11	1.786	22 35 02.01	117.32	- 6 42 56.6	540.6	61.56	14 48.1	54 13.3	I. S.
25	5 08.91	1.785	23 21 53.32	117.26	- 2 58 55.0	576.5	61.57	14 53.2	54 32.5	I. S.
26	5 52.06	1.816	0 09 05.72	119.12	+ 0 55 46.7	593.6	62.09	15 01.4	55 02.5	I. S.
27	6 36.36	1.883	0 57 27.91	123.08	+ 4 53 10.6	+ 589.4	63.13	15 12.4	55 42.9	I. S.
28	7 22.67	1.983	1 47 50.64	129.16	8 43 50.0	559.0	64.69	15 25.9	56 32.5	I. S.
29	8 11.79	2.114	2 41 02.23	137.08	12 15 55.3	495.3	66.66	15 41.3	57 28.6	I. S.
30	9 04.31	2.264	3 37 38.92	146.07	15 14 38.2	391.0	68.83	15 57.3	58 27.4	I. S.
31	10 00.42	2.409	4 37 51.26	154.76	+ 17 22 46.5	+ 242.3	70.86	16 12.6	59 23.6	I. S.

FOR TRANSIT AT WASHINGTON.

Date.	Mean Time of Transit.	Apparent Right Ascension.	Apparent Declination.	Hor. Par.	Semi- diam.	Sid.T. of S.D. Pass. Mer.	Date.	Mean Time of Transit.	Apparent Right Ascension.	Apparent Declination.	Hor. Par.	Semi- diam.	Sid.T. of S.D. Pass. Mer.
	h m	h m s	° ' "	"	"	s		h m	h m s	° ' "	"	"	s
Jan. 0	0 52.2	19 29 07.19	-24 03 20.5	6.7	2.5	0.18	Feb. 14	22 43.4	20 21 14.69	-17 13 29.6	11.6	4.5	0.31
1	0 55.2	19 36 06.43	23 47 25.8	6.7	2.5	0.18	15	22 40.3	20 22 05.30	17 23 24.3	11.3	4.4	0.31
2	0 58.2	19 43 03.04	23 29 57.5	6.8	2.6	0.18	16	22 37.6	20 23 21.61	17 31 54.1	11.1	4.3	0.30
3	1 01.2	19 49 56.46	23 10 56.7	6.9	2.6	0.18	17	22 35.3	20 25 01.89	17 38 57.9	10.9	4.2	0.30
4	1 04.1	19 56 46.09	22 50 24.2	7.0	2.6	0.19	18	22 33.5	20 27 04.31	17 44 35.2	10.7	4.1	0.29
5	1 06.9	20 03 31.12	-22 28 22.4	7.0	2.7	0.19	19	22 31.9	20 29 27.19	-17 48 46.1	10.5	4.0	0.28
6	1 09.6	20 10 10.78	22 04 53.7	7.1	2.7	0.19	20	22 30.6	20 32 08.91	17 51 30.4	10.3	3.9	0.28
7	1 12.2	20 16 44.16	21 40 01.4	7.2	2.7	0.19	21	22 29.6	20 35 07.93	17 52 47.7	10.1	3.8	0.27
8	1 14.7	20 23 10.21	21 13 49.6	7.3	2.8	0.20	22	22 28.9	20 38 22.85	17 52 38.7	9.9	3.8	0.27
9	1 17.0	20 29 27.71	20 46 23.3	7.5	2.8	0.20	23	22 28.5	20 41 52.35	17 51 03.6	9.8	3.7	0.26
10	1 19.2	20 35 35.35	-20 17 48.8	7.6	2.9	0.21	24	22 28.3	20 45 35.17	-17 48 02.7	9.6	3.6	0.25
11	1 21.2	20 41 31.58	19 48 13.7	7.8	2.9	0.21	25	22 28.3	20 49 30.23	17 43 36.5	9.5	3.6	0.24
12	1 23.0	20 47 14.82	19 17 46.5	7.9	3.0	0.21	26	22 28.4	20 53 36.52	17 37 45.3	9.3	3.5	0.24
13	1 24.4	20 52 43.13	18 46 38.3	8.1	3.0	0.22	27	22 28.7	20 57 53.09	17 30 29.7	9.2	3.5	0.23
14	1 25.7	20 57 54.37	18 15 01.4	8.3	3.1	0.22	28	22 29.2	21 02 19.11	17 21 50.1	9.0	3.4	0.23
15	1 26.6	21 02 46.23	-17 43 10.0	8.5	3.2	0.23	Mar. 1	22 29.9	21 06 53.81	-17 11 46.9	8.9	3.4	0.23
16	1 27.2	21 07 16.22	17 11 21.0	8.7	3.3	0.23	2	22 30.7	21 11 36.43	17 00 20.8	8.7	3.3	0.23
17	1 27.3	21 11 21.56	16 39 52.5	8.9	3.4	0.23	3	22 31.6	21 16 26.35	16 47 32.3	8.6	3.3	0.23
18	1 27.0	21 14 59.46	16 09 05.2	9.2	3.5	0.24	4	22 32.6	21 21 23.04	16 33 21.8	8.5	3.2	0.22
19	1 26.2	21 18 06.82	15 39 21.5	9.5	3.6	0.24	5	22 33.7	21 26 25.97	16 17 50.1	8.4	3.2	0.22
20	1 24.8	21 20 40.61	-15 11 05.7	9.8	3.7	0.25	6	22 34.9	21 31 34.67	-16 00 57.1	8.3	3.1	0.22
21	1 22.8	21 22 37.98	14 44 42.8	10.1	3.8	0.26	7	22 36.2	21 36 48.69	15 42 43.9	8.2	3.1	0.22
22	1 20.2	21 23 56.12	14 20 37.8	10.4	3.9	0.26	8	22 37.6	21 42 07.70	15 23 10.8	8.1	3.0	0.21
23	1 16.9	21 24 32.77	13 59 16.0	10.8	4.0	0.27	9	22 39.0	21 47 31.38	15 02 18.2	8.0	3.0	0.21
24	1 12.8	21 24 26.13	13 41 00.7	11.1	4.1	0.28	10	22 40.5	21 52 59.44	14 40 06.8	7.9	3.0	0.20
25	1 08.1	21 23 35.41	-13 26 12.2	11.5	4.2	0.29	11	22 42.1	21 58 31.61	-14 16 36.8	7.8	3.0	0.20
26	1 02.6	21 22 00.60	13 15 06.6	11.8	4.4	0.30	12	22 43.8	22 04 07.68	13 51 49.1	7.7	3.0	0.20
27	0 56.4	21 19 42.96	13 07 54.9	12.1	4.5	0.30	13	22 45.5	22 09 47.43	13 25 44.0	7.6	2.9	0.20
28	0 49.5	21 16 45.22	13 04 40.9	12.3	4.6	0.31	14	22 47.3	22 15 30.71	12 58 22.0	7.5	2.9	0.20
29	0 42.0	21 13 11.47	13 05 22.0	12.6	4.7	0.32	15	22 49.1	22 21 17.40	12 29 43.7	7.5	2.9	0.19
30	0 34.0	21 09 07.01	-13 09 47.6	12.9	4.9	0.33	16	22 50.9	22 27 07.38	-11 59 49.6	7.4	2.8	0.19
31	0 25.6	21 04 38.43	13 17 40.0	13.1	5.0	0.34	17	22 52.8	22 33 00.54	11 28 40.4	7.4	2.8	0.19
Feb. 1	0 16.9	20 59 53.23	13 28 35.7	13.2	5.0	0.34	18	22 54.8	22 38 56.83	10 56 16.3	7.3	2.8	0.19
2	0 08.1	20 54 59.47	13 42 06.5	13.3	5.0	0.34	19	22 56.8	22 44 56.22	10 22 38.3	7.2	2.7	0.18
2	23 59.3	20 50 05.18	13 57 41.1	13.4	5.1	0.35	20	22 58.9	22 50 58.70	9 47 46.7	7.2	2.7	0.18
3	23 50.6	20 45 18.15	-14 14 47.9	13.5	5.1	0.35	21	23 01.1	22 57 04.25	-9 11 42.3	7.1	2.7	0.18
4	23 42.1	20 40 45.36	14 32 55.8	13.5	5.1	0.35	22	23 03.3	23 03 12.90	8 34 25.7	7.0	2.7	0.18
5	23 34.0	20 36 32.59	14 51 36.1	13.4	5.0	0.35	23	23 05.6	23 09 24.69	7 55 57.4	7.0	2.7	0.18
6	23 26.3	20 32 45.57	15 10 23.7	13.3	5.0	0.34	24	23 07.9	23 15 39.65	7 16 18.3	6.9	2.6	0.17
7	23 19.1	20 29 27.04	15 28 56.5	13.1	4.9	0.34	25	23 10.2	23 21 57.87	6 35 29.4	6.9	2.6	0.17
8	23 12.4	20 26 39.70	-15 46 57.2	12.9	4.8	0.33	26	23 12.6	23 28 19.44	-5 53 31.1	6.8	2.6	0.17
9	23 06.2	20 24 24.99	16 04 11.1	12.7	4.8	0.33	27	23 15.1	23 34 44.47	5 10 24.8	6.8	2.6	0.17
10	23 00.6	20 22 43.41	16 20 26.8	12.5	4.8	0.33	28	23 17.7	23 41 13.08	4 26 11.4	6.8	2.6	0.17
11	22 55.5	20 21 34.58	16 35 35.9	12.3	4.7	0.32	29	23 20.3	23 47 45.39	3 40 52.0	6.7	2.5	0.17
12	22 51.0	20 20 57.73	16 49 32.5	12.1	4.7	0.32	30	23 22.9	23 54 21.54	2 54 28.2	6.7	2.5	0.17
13	22 46.9	20 20 51.62	-17 02 11.6	11.9	4.6	0.31	31	23 25.6	0 01 01.67	-2 07 01.4	6.7	2.5	0.17
14	22 43.4	20 21 14.69	-17 13 29.6	11.6	4.5	0.31	Apr. 1	23 28.4	0 07 45.95	-1 18 33.5	6.7	2.5	0.17

FOR TRANSIT AT WASHINGTON.

Date.	Mean Time of Transit.	Apparent Right Ascension.	Apparent Declination.	Hor. Par.	Semi-diam.	Sid. T. of S.D. Pass. Mer.	Date.	Mean Time of Transit.	Apparent Right Ascension.	Apparent Declination.	Hor. Par.	Semi-diam.	Sid. T. of S.D. Pass. Mer.
	h m	h m s	° ' "	"	"	s		h m	h m s	° ' "	"	"	s
Apr. 1	23 28.4	0 07 45.95	- 1 18 33.5	6.7	2.5	0.17	May 18	1 15.1	4 55 59.33	+24 16 09.1	12.8	4.8	0.35
2	23 31.3	0 14 34.56	- 0 29 06.5	6.7	2.5	0.17	19	1 12.5	4 57 18.83	24 06 57.1	13.1	4.9	0.36
3	23 34.2	0 21 27.60	+ 0 21 17.0	6.7	2.5	0.17	20	1 09.5	4 58 17.51	23 56 15.3	13.4	5.1	0.37
4	23 37.2	0 28 25.26	1 12 34.3	6.6	2.5	0.17	21	1 06.1	4 58 55.55	23 44 07.6	13.7	5.2	0.38
5	23 40.3	0 35 27.71	2 04 42.1	6.6	2.5	0.17	22	1 02.4	4 59 13.28	23 30 38.6	14.0	5.3	0.38
6	23 43.5	0 42 35.04	+ 2 57 36.7	6.6	2.5	0.17	23	0 58.4	4 59 11.22	+23 15 52.9	14.2	5.4	0.39
7	23 46.8	0 49 47.34	3 51 13.6	6.6	2.5	0.17	24	0 54.1	4 58 50.08	22 59 55.4	14.5	5.5	0.40
8	23 50.1	0 57 04.68	4 45 28.3	6.6	2.5	0.17	25	0 49.5	4 58 10.69	22 42 52.5	14.8	5.6	0.41
9	23 53.5	1 04 27.07	5 40 14.6	6.6	2.5	0.17	26	0 44.7	4 57 14.21	22 24 51.0	15.0	5.7	0.41
10	23 57.0	1 11 54.47	6 35 25.8	6.6	2.5	0.17	27	0 39.6	4 56 01.89	22 05 58.1	15.2	5.7	0.41
12	0 00.5	1 19 26.79	+ 7 30 54.5	6.6	2.5	0.17	28	0 34.3	4 54 35.21	+21 46 22.5	15.4	5.8	0.42
13	0 04.1	1 27 03.81	8 26 32.1	6.6	2.5	0.17	29	0 28.8	4 52 55.88	21 26 13.3	15.6	5.9	0.42
14	0 07.8	1 34 45.26	9 22 09.8	6.6	2.5	0.17	30	0 23.0	4 51 05.75	21 05 41.0	15.8	5.9	0.43
15	0 11.6	1 42 30.78	10 17 36.7	6.7	2.6	0.17	31	0 17.0	4 49 06.87	20 44 56.5	15.9	6.0	0.43
16	0 15.6	1 50 19.75	11 12 42.0	6.7	2.6	0.17	June 1	0 10.9	4 47 01.38	20 24 11.9	15.9	6.0	0.43
17	0 19.6	1 58 11.66	+12 07 13.9	6.8	2.6	0.17	2	0 04.8	4 44 51.54	+20 03 39.1	15.9	6.0	0.43
18	0 23.6	2 06 05.71	13 00 59.9	6.8	2.6	0.17	2	23 58.7	4 42 39.66	19 43 31.4	16.0	6.1	0.43
19	0 27.6	2 14 01.04	13 53 47.0	6.9	2.7	0.18	3	23 52.6	4 40 28.02	19 24 01.2	16.0	6.1	0.43
20	0 31.5	2 21 56.70	14 45 22.5	7.0	2.7	0.18	4	23 46.6	4 38 18.95	19 05 21.4	16.0	6.1	0.43
21	0 35.4	2 29 51.57	15 35 33.5	7.0	2.7	0.18	5	23 40.7	4 36 14.57	18 47 43.5	15.9	6.1	0.42
22	0 39.3	2 37 44.46	+16 24 08.0	7.1	2.7	0.19	6	23 34.9	4 34 16.99	+18 31 19.1	15.8	6.0	0.42
23	0 43.1	2 45 34.27	17 10 54.3	7.2	2.8	0.19	7	23 29.2	4 32 28.15	18 16 18.2	15.6	6.0	0.41
24	0 46.9	2 53 19.73	17 55 42.1	7.3	2.8	0.20	8	23 23.6	4 30 49.80	18 02 49.9	15.5	5.9	0.41
25	0 50.6	3 00 59.58	18 38 21.0	7.4	2.9	0.20	9	23 18.0	4 29 23.56	17 51 02.1	15.3	5.8	0.41
26	0 54.3	3 08 32.58	19 18 47.0	7.6	2.9	0.20	10	23 12.9	4 28 10.76	17 41 00.7	15.1	5.7	0.40
27	0 57.8	3 15 57.58	+19 56 50.5	7.7	2.9	0.21	11	23 08.1	4 27 12.65	+17 32 50.7	14.8	5.6	0.39
28	1 01.1	3 23 13.42	20 32 27.9	7.9	3.0	0.21	12	23 03.5	4 26 30.19	17 26 35.0	14.6	5.5	0.39
29	1 04.2	3 30 19.05	21 05 36.1	8.0	3.0	0.22	13	22 59.1	4 25 04.23	17 22 15.3	14.3	5.4	0.38
30	1 07.1	3 37 13.46	21 36 13.4	8.2	3.1	0.23	14	22 54.9	4 25 55.40	17 19 51.9	14.1	5.3	0.37
May 1	1 09.9	3 43 55.77	22 04 19.0	8.4	3.2	0.23	15	22 51.1	4 26 04.18	17 19 24.0	13.8	5.2	0.37
2	1 12.5	3 50 24.93	+22 29 53.2	8.6	3.3	0.23	16	22 47.6	4 26 30.95	+17 20 49.6	13.5	5.1	0.37
3	1 14.8	3 56 40.23	22 52 57.7	8.8	3.3	0.24	17	22 44.4	4 27 16.00	17 24 05.4	13.2	5.0	0.36
4	1 16.8	4 02 40.97	23 13 34.5	9.0	3.4	0.24	18	22 41.5	4 28 19.46	17 29 07.7	12.9	4.9	0.35
5	1 18.6	4 08 26.38	23 31 46.4	9.2	3.5	0.25	19	22 39.0	4 29 41.44	17 35 51.7	12.6	4.8	0.34
6	1 20.2	4 13 55.88	23 47 36.6	9.5	3.6	0.26	20	22 36.8	4 31 21.97	17 44 11.9	12.3	4.7	0.33
7	1 21.5	4 19 08.87	+24 01 08.7	9.7	3.7	0.27	21	22 34.9	4 33 21.04	+17 54 02.7	12.0	4.6	0.33
8	1 22.5	4 24 04.78	24 12 26.5	10.0	3.8	0.28	22	22 33.3	4 35 38.59	18 05 17.6	11.7	4.5	0.32
9	1 23.2	4 28 43.09	24 21 33.6	10.2	3.9	0.28	23	22 31.9	4 38 14.60	18 17 49.8	11.4	4.4	0.31
10	1 23.6	4 33 03.23	24 28 34.0	10.5	4.0	0.29	24	22 30.8	4 41 08.96	18 31 32.0	11.2	4.3	0.30
11	1 23.6	4 37 04.71	24 33 31.5	10.8	4.1	0.30	25	22 30.0	4 44 21.62	18 46 17.0	10.9	4.2	0.30
12	1 23.3	4 40 47.08	+24 36 30.0	11.1	4.2	0.30	26	22 29.6	4 47 52.53	+19 01 57.1	10.6	4.1	0.29
13	1 22.7	4 44 09.91	24 37 33.3	11.3	4.3	0.31	27	22 29.5	4 51 41.63	19 18 23.9	10.4	4.0	0.29
14	1 21.8	4 47 12.81	24 36 45.1	11.6	4.4	0.32	28	22 29.6	4 55 48.91	19 35 29.5	10.2	3.9	0.28
15	1 20.6	4 49 55.45	24 34 09.0	11.9	4.5	0.33	29	22 30.1	5 00 14.32	19 53 04.8	9.9	3.8	0.27
16	1 19.1	4 52 17.54	24 29 48.5	12.2	4.6	0.34	30	22 30.9	5 04 57.81	20 11 01.1	9.6	3.7	0.27
17	1 17.3	4 54 18.86	+24 23 47.4	12.5	4.7	0.35	July 1	22 31.9	5 09 59.38	+20 29 08.8	9.4	3.6	0.26
18	1 15.1	4 55 59.33	+24 16 09.1	12.8	4.8	0.35	2	22 33.3	5 15 19.01	+20 47 18.5	9.2	3.5	0.26

FOR TRANSIT AT WASHINGTON.

Date.	Mean Time of Transit.	Apparent Right Ascension.	Apparent Declination.	Hor. Par.	Semi-diam.	Sid.T. of S.D. Pass. Mer.	Date.	Mean Time of Transit.	Apparent Right Ascension.	Apparent Declination.	Hor. Par.	Semi-diam.	Sid.T. of S.D. Pass. Mer.
	h m	h m s	° ' "	"	"	s		h m	h m s	° ' "	"	"	s
July 1	22 31.9	5 09 59.38	+20 29 08.8	9.4	3.6	0.26	Aug. 17	1 20.3	10 59 58.96	+ 6 58 51.5	7.1	2.7	0.18
2	22 33.3	5 15 19.01	20 47 18.5	9.2	3.5	0.26	18	1 21.9	11 05 37.62	6 15 31.2	7.2	2.8	0.19
3	22 35.0	5 20 56.65	21 05 19.9	9.0	3.5	0.25	19	1 23.4	11 11 09.59	5 32 21.1	7.3	2.8	0.19
4	22 37.1	5 26 52.24	21 23 02.4	8.8	3.4	0.24	20	1 24.8	11 16 35.04	4 49 23.7	7.4	2.8	0.19
5	22 39.4	5 33 05.71	21 40 15.7	8.6	3.3	0.24	21	1 26.2	11 21 54.09	4 06 41.8	7.4	2.8	0.19
6	22 42.0	5 39 36.85	+21 56 47.4	8.4	3.2	0.23	22	1 27.5	11 27 06.85	+ 3 24 18.1	7.5	2.9	0.19
7	22 44.8	5 46 25.44	22 12 26.5	8.2	3.1	0.23	23	1 28.7	11 32 13.40	2 42 15.4	7.6	2.9	0.19
8	22 47.9	5 53 31.15	22 27 00.8	8.0	3.0	0.22	24	1 29.8	11 37 13.82	2 00 35.8	7.7	2.9	0.19
9	22 51.3	6 00 53.54	22 40 18.4	7.9	3.0	0.22	25	1 30.7	11 42 08.11	1 19 22.2	7.7	2.9	0.20
10	22 54.9	6 08 31.96	22 52 06.8	7.7	3.0	0.22	26	1 31.5	11 46 56.27	+ 0 38 37.6	7.8	3.0	0.20
11	22 58.8	6 16 25.72	+23 02 13.8	7.6	2.9	0.21	27	1 32.3	11 51 38.28	- 0 01 36.0	7.9	3.0	0.20
12	23 03.0	6 24 33.86	23 10 27.4	7.5	2.9	0.21	28	1 33.0	11 56 14.10	0 41 15.6	8.0	3.1	0.21
13	23 07.4	6 32 55.31	23 16 37.2	7.4	2.8	0.20	29	1 33.6	12 00 43.64	1 20 18.3	8.1	3.1	0.21
14	23 12.1	6 41 28.81	23 20 31.1	7.3	2.8	0.20	30	1 34.0	12 05 06.81	1 58 41.5	8.2	3.1	0.21
15	23 16.9	6 50 12.89	23 22 01.6	7.2	2.8	0.20	31	1 34.3	12 09 23.42	2 36 21.9	8.3	3.2	0.21
16	23 21.8	6 59 05.96	+23 21 00.1	7.1	2.7	0.20	Sept. 1	1 34.5	12 13 33.33	- 3 13 16.3	8.4	3.2	0.22
17	23 26.8	7 08 06.25	23 17 20.7	7.0	2.7	0.19	2	1 34.6	12 17 36.25	3 49 21.7	8.5	3.3	0.22
18	23 31.9	7 17 12.13	23 10 59.3	6.9	2.6	0.19	3	1 34.6	12 21 31.94	4 24 34.5	8.7	3.3	0.22
19	23 37.2	7 26 21.68	23 01 53.4	6.8	2.6	0.19	4	1 34.5	12 25 20.06	4 58 50.6	8.8	3.3	0.23
20	23 42.5	7 35 32.96	22 50 03.0	6.8	2.6	0.19	5	1 34.3	12 29 00.21	5 32 06.6	9.0	3.4	0.23
21	23 47.7	7 44 44.19	+22 35 29.9	6.7	2.6	0.19	6	1 33.9	12 32 32.02	- 6 04 17.1	9.1	3.5	0.23
22	23 52.9	7 53 53.70	22 18 17.8	6.7	2.5	0.19	7	1 33.3	12 35 54.98	6 35 17.9	9.2	3.5	0.24
23	23 58.0	8 02 59.91	21 58 31.8	6.6	2.5	0.18	8	1 32.5	12 39 08.52	7 05 03.5	9.4	3.6	0.24
25	0 03.1	8 12 01.46	21 36 18.5	6.6	2.5	0.18	9	1 31.6	12 42 12.03	7 33 28.5	9.5	3.6	0.24
26	0 08.1	8 20 57.09	21 11 45.6	6.6	2.5	0.18	10	1 30.6	12 45 04.81	8 00 26.5	9.7	3.7	0.25
27	0 13.0	8 29 45.77	+20 45 01.2	6.6	2.5	0.18	11	1 29.4	12 47 46.11	- 8 25 50.8	9.9	3.7	0.25
28	0 17.7	8 38 26.61	20 16 14.5	6.5	2.5	0.18	12	1 27.9	12 50 15.09	8 49 33.6	10.1	3.8	0.26
29	0 22.2	8 46 58.98	19 45 34.8	6.5	2.5	0.18	13	1 26.2	12 52 30.82	9 11 27.1	10.3	3.9	0.26
30	0 26.6	8 55 22.31	19 13 10.8	6.5	2.5	0.18	14	1 24.3	12 54 32.32	9 31 22.3	10.5	4.0	0.26
31	0 30.9	9 03 36.22	18 39 12.4	6.5	2.5	0.18	15	1 22.1	12 56 18.49	9 49 09.0	10.7	4.0	0.27
Aug. 1	0 35.0	9 11 40.45	+18 03 48.8	6.5	2.5	0.17	16	1 19.6	12 57 48.26	-10 04 37.1	10.9	4.1	0.28
2	0 38.9	9 19 34.86	17 27 07.8	6.5	2.5	0.17	17	1 16.9	12 59 00.33	10 17 33.9	11.1	4.2	0.29
3	0 42.7	9 27 19.43	16 49 18.3	6.6	2.5	0.17	18	1 13.9	12 59 53.51	10 27 47.2	11.3	4.3	0.29
4	0 46.4	9 34 54.15	16 10 28.0	6.6	2.5	0.17	19	1 10.5	13 00 26.58	10 35 04.7	11.5	4.3	0.30
5	0 49.9	9 42 19.18	15 30 43.9	6.6	2.5	0.17	20	1 06.8	13 00 38.36	10 39 11.6	11.7	4.4	0.30
6	0 53.2	9 49 34.69	+14 50 13.0	6.7	2.5	0.17	21	1 02.7	13 00 27.67	-10 39 54.1	11.9	4.5	0.31
7	0 56.3	9 56 40.84	14 09 01.5	6.7	2.6	0.18	22	0 58.2	12 59 53.51	10 36 57.5	12.1	4.6	0.32
8	0 59.3	10 03 37.82	13 27 15.6	6.7	2.6	0.18	23	0 53.3	12 58 55.11	10 30 08.2	12.4	4.7	0.32
9	1 02.2	10 10 25.91	12 45 00.7	6.8	2.6	0.18	24	0 48.0	12 57 31.99	10 19 14.2	12.6	4.7	0.32
10	1 04.9	10 17 05.29	12 02 22.1	6.8	2.6	0.18	25	0 42.2	12 55 44.12	10 04 05.0	12.7	4.8	0.33
11	1 07.5	10 23 36.27	+11 19 24.6	6.8	2.6	0.18	26	0 36.1	12 53 31.98	- 9 44 34.3	12.9	4.8	0.34
12	1 09.9	10 29 59.08	10 36 12.5	6.9	2.7	0.18	27	0 29.6	12 50 56.67	9 20 40.5	13.0	4.9	0.34
13	1 12.2	10 36 13.95	9 52 50.3	6.9	2.7	0.18	28	0 22.7	12 48 00.10	8 52 29.1	13.1	5.0	0.34
14	1 14.4	10 42 21.15	9 09 21.5	7.0	2.7	0.18	29	0 15.5	12 44 44.96	8 20 12.3	13.2	5.0	0.34
15	1 16.5	10 48 20.91	8 25 49.8	7.0	2.7	0.18	30	0 08.1	12 41 14.83	7 44 12.4	13.3	5.0	0.34
16	1 18.5	10 54 13.45	+ 7 42 18.7	7.1	2.7	0.18	Oct. 1	0 00.6	12 37 34.10	- 7 05 00.8	13.3	5.0	0.34
17	1 20.3	10 59 58.96	+ 6 58 51.5	7.1	2.7	0.18	1	23 52.9	12 33 47.95	- 6 23 19.5	13.4	5.1	0.34

FOR TRANSIT AT WASHINGTON.

Date.	Mean Time of Transit.	Apparent Right Ascension.	Apparent Declination.	Hor. Par.	Semi- diam.	Sid. T. of S.D. Pass. Mer.	Date.	Mean Time of Transit.	Apparent Right Ascension.	Apparent Declination.	Hor. Par.	Semi- diam.	Sid. T. of S.D. Pass. Mer.
	h m	h m s	° ' "	"	"	s		h m	h m s	° ' "	"	"	s
Oct. 1	23 52.9	12 33 47.95	-6 23 19.5	13.4	5.1	0.34	Nov. 15	23 33.3	15 11 32.34	-17 42 29.9	6.1	2.3	0.16
2	23 45.2	12 30 02.15	5 39 58.7	13.3	5.1	0.34	16	23 35.7	15 17 54.56	18 14 16.2	6.1	2.3	0.16
3	23 37.6	12 26 22.83	4 55 55.9	13.2	5.0	0.34	17	23 38.1	15 24 18.12	18 45 09.3	6.1	2.3	0.16
4	23 30.2	12 22 56.20	4 12 13.0	13.0	4.9	0.33	18	23 40.6	15 30 43.05	19 15 07.2	6.1	2.3	0.16
5	23 23.2	12 19 48.24	3 29 53.2	12.8	4.8	0.33	19	23 43.1	15 37 09.41	19 44 08.4	6.1	2.3	0.16
6	23 16.6	12 17 04.47	2 49 56.8	12.6	4.7	0.32	20	23 45.6	15 43 37.24	-20 12 11.6	6.1	2.3	0.16
7	23 10.4	12 14 49.61	2 13 19.9	12.4	4.7	0.31	21	23 48.1	15 50 06.61	20 39 15.1	6.1	2.3	0.16
8	23 04.7	12 12 07.49	1 40 49.8	12.1	4.6	0.30	22	23 50.7	15 56 37.54	21 05 17.7	6.1	2.3	0.16
9	22 59.7	12 12 00.92	1 13 04.6	11.8	4.5	0.29	23	23 53.3	16 03 10.05	21 30 17.5	6.1	2.3	0.16
10	22 55.3	12 11 31.54	0 50 31.5	11.4	4.4	0.28	24	23 55.9	16 09 44.17	21 54 13.5	6.1	2.3	0.17
11	22 51.5	12 11 39.98	0 33 27.1	11.1	4.2	0.27	25	23 58.5	16 16 19.92	-22 17 03.9	6.1	2.3	0.17
12	22 48.3	12 12 26.00	0 21 59.3	10.7	4.1	0.27	27	0 01.2	16 22 57.32	22 38 47.5	6.1	2.3	0.17
13	22 45.8	12 13 48.50	0 16 07.0	10.4	4.0	0.26	28	0 03.9	16 29 36.36	22 59 23.0	6.1	2.3	0.17
14	22 43.8	12 15 45.70	0 15 40.5	10.1	3.9	0.26	29	0 06.6	16 36 17.03	23 18 48.6	6.1	2.3	0.17
15	22 42.4	12 18 15.39	0 20 26.0	9.8	3.8	0.25	30	0 09.4	16 42 59.32	23 37 03.3	6.2	2.3	0.17
16	22 41.4	12 21 14.95	0 30 04.0	9.5	3.7	0.24	Dec. 1	0 12.2	16 49 43.19	-23 54 05.3	6.2	2.3	0.17
17	22 40.9	12 24 41.65	0 44 12.6	9.2	3.5	0.23	2	0 15.0	16 56 28.55	24 09 53.4	6.2	2.3	0.17
18	22 40.8	12 28 32.64	1 02 27.6	8.9	3.4	0.23	3	0 17.8	17 03 15.42	24 24 26.3	6.2	2.3	0.17
19	22 41.1	12 32 45.12	1 24 24.4	8.6	3.3	0.22	4	0 20.6	17 10 03.67	24 37 42.2	6.2	2.3	0.17
20	22 41.7	12 37 16.40	1 49 38.0	8.4	3.2	0.22	5	0 23.5	17 16 53.20	24 49 39.6	6.3	2.4	0.17
21	22 42.5	12 42 04.01	2 17 44.0	8.2	3.1	0.21	6	0 26.4	17 23 43.91	-25 00 17.6	6.3	2.4	0.18
22	22 43.6	12 47 05.64	2 48 19.3	8.0	3.1	0.20	7	0 29.3	17 30 35.65	25 09 34.6	6.3	2.4	0.18
23	22 44.8	12 52 19.20	3 21 02.1	7.8	3.1	0.20	8	0 32.3	17 37 28.29	25 17 29.2	6.3	2.4	0.18
24	22 46.3	12 57 42.87	3 55 32.1	7.7	3.0	0.20	9	0 35.3	17 44 21.65	25 24 00.0	6.4	2.4	0.18
25	22 47.9	13 03 15.07	4 31 31.3	7.5	3.0	0.19	10	0 38.3	17 51 15.51	25 29 06.1	6.4	2.5	0.18
26	22 49.6	13 08 54.38	5 08 42.4	7.4	2.9	0.19	11	0 41.2	17 58 09.68	-25 32 45.8	6.5	2.5	0.18
27	22 51.4	13 14 39.64	5 46 50.7	7.3	2.8	0.19	12	0 44.1	18 05 03.84	25 34 58.4	6.5	2.5	0.18
28	22 53.3	13 20 29.84	6 25 42.5	7.2	2.8	0.19	13	0 47.0	18 11 57.69	25 35 42.4	6.5	2.5	0.18
29	22 55.3	13 26 24.16	7 05 06.1	7.1	2.7	0.18	14	0 49.9	18 18 50.89	25 34 57.2	6.6	2.5	0.18
30	22 57.3	13 32 21.88	7 44 50.7	7.0	2.7	0.18	15	0 52.8	18 25 43.06	25 32 42.0	6.7	2.6	0.19
31	22 59.3	13 38 22.42	8 24 47.1	6.9	2.6	0.17	16	0 55.7	18 32 33.78	-25 28 56.0	6.7	2.6	0.19
Nov. 1	23 01.4	13 44 25.37	9 04 47.0	6.8	2.6	0.17	17	0 58.6	18 39 22.54	25 23 39.1	6.8	2.6	0.19
2	23 03.5	13 50 30.32	9 44 43.0	6.7	2.6	0.17	18	1 01.4	18 46 08.78	25 16 50.6	6.9	2.6	0.19
3	23 05.7	13 56 37.00	10 24 28.8	6.6	2.6	0.17	19	1 04.1	18 52 51.84	25 08 30.9	7.0	2.7	0.19
4	23 07.9	14 02 45.19	11 03 58.7	6.5	2.6	0.17	20	1 06.8	18 59 31.06	24 58 40.4	7.1	2.7	0.20
5	23 10.1	14 08 54.73	-11 43 07.7	6.4	2.5	0.17	21	1 09.4	19 06 05.61	-24 47 20.1	7.2	2.8	0.20
6	23 12.3	14 15 05.50	12 21 51.5	6.4	2.5	0.17	22	1 12.0	19 12 34.57	24 34 31.7	7.3	2.8	0.20
7	23 14.6	14 21 17.41	13 00 05.9	6.3	2.5	0.17	23	1 14.5	19 18 56.94	24 20 16.5	7.4	2.8	0.20
8	23 16.9	14 27 30.42	13 37 47.6	6.3	2.5	0.17	24	1 16.8	19 25 11.61	24 04 37.2	7.5	2.9	0.21
9	23 19.2	14 33 44.50	14 14 53.5	6.3	2.5	0.16	25	1 19.0	19 31 17.24	23 47 37.3	7.7	2.9	0.21
10	23 21.5	14 39 59.65	-14 51 20.5	6.2	2.4	0.16	26	1 21.0	19 37 12.40	-23 29 21.0	7.9	3.0	0.22
11	23 23.8	14 46 15.89	15 27 06.0	6.2	2.4	0.16	27	1 22.7	19 42 55.40	23 09 53.5	8.0	3.0	0.22
12	23 26.1	14 52 33.25	16 02 07.9	6.2	2.4	0.16	28	1 24.3	19 48 24.37	22 49 21.5	8.1	3.0	0.22
13	23 28.5	14 58 51.74	16 36 24.0	6.2	2.4	0.16	29	1 25.5	19 53 37.20	22 27 52.6	8.3	3.1	0.23
14	23 30.9	15 05 11.41	17 09 51.9	6.1	2.4	0.16	30	1 26.4	19 58 31.61	22 05 36.4	8.5	3.2	0.23
15	23 33.3	15 11 32.34	-17 42 29.9	6.1	2.3	0.16	31	1 27.0	20 03 05.03	-21 42 43.9	8.7	3.3	0.24
16	23 35.7	15 17 54.56	-18 14 16.2	6.1	2.3	0.16	32	1 27.2	20 07 14.63	-21 19 27.7	8.9	3.4	0.24

FOR TRANSIT AT WASHINGTON.

Date.	Mean Time of Transit.	Apparent Right Ascension.	Apparent Declination.	Hor. Par.	Semi- diam.	Sid.T. of S.D. Pass. Mer.	Date.	Mean Time of Transit.	Apparent Right Ascension.	Apparent Declination.	Hor. Par.	Semi- diam.	Sid.T. of S.D. Pass. Mer.
	h m	h m s	° ' "	"	"	s		h m	h m s	° ' "	"	"	s
Jan. 0	0 37.4	19 14 12.42	-23 20 13.6	5.2	5.1	0.37	Feb. 15	1 27.3	23 05 39.52	-7 20 40.2	5.5	5.4	0.36
1	0 38.9	19 19 39.35	23 12 08.8	5.2	5.1	0.37	16	1 28.0	23 10 15.61	6 50 48.2	5.5	5.4	0.36
2	0 40.4	19 25 05.55	23 03 21.2	5.2	5.1	0.37	17	1 28.7	23 14 50.99	6 20 45.4	5.6	5.4	0.36
3	0 41.8	19 30 30.97	22 53 51.1	5.2	5.1	0.37	18	1 29.3	23 19 25.70	5 50 32.7	5.6	5.4	0.36
4	0 43.3	19 35 55.54	22 43 39.0	5.2	5.1	0.37	19	1 29.9	23 23 59.78	5 20 10.8	5.6	5.4	0.36
5	0 44.8	19 41 19.22	22 32 45.4	5.2	5.1	0.37	20	1 30.5	23 28 33.28	4 49 40.3	5.6	5.4	0.36
6	0 46.2	19 46 41.96	22 21 10.6	5.2	5.1	0.37	21	1 31.1	23 33 06.22	4 19 02.2	5.6	5.5	0.36
7	0 47.6	19 52 03.72	22 08 55.2	5.2	5.1	0.37	22	1 31.7	23 37 38.65	3 48 17.1	5.6	5.5	0.36
8	0 49.0	19 57 24.47	21 55 59.8	5.2	5.1	0.37	23	1 32.3	23 42 10.60	3 17 25.9	5.6	5.5	0.36
9	0 50.4	20 02 44.14	21 42 24.7	5.3	5.1	0.36	24	1 32.9	23 46 42.12	2 46 29.2	5.7	5.5	0.36
10	0 51.8	20 08 02.72	21 28 10.6	5.3	5.1	0.36	25	1 33.4	23 51 13.25	2 15 27.8	5.7	5.5	0.37
11	0 53.1	20 13 20.16	21 13 18.1	5.3	5.1	0.36	26	1 34.0	23 55 44.04	1 44 22.4	5.7	5.5	0.37
12	0 54.4	20 18 36.44	20 57 47.8	5.3	5.1	0.36	27	1 34.6	00 00 14.53	1 13 13.9	5.7	5.5	0.37
13	0 55.7	20 23 51.54	20 41 40.5	5.3	5.1	0.36	28	1 35.2	00 04 44.76	0 42 03.0	5.7	5.5	0.37
14	0 57.0	20 29 05.43	20 24 56.6	5.3	5.1	0.36	Mar. 1	1 35.7	00 09 14.75	0 10 50.5	5.7	5.6	0.37
15	0 58.3	20 34 18.10	20 07 36.6	5.3	5.1	0.36	2	1 36.2	0 13 44.55	+0 20 22.9	5.7	5.6	0.37
16	0 59.5	20 39 29.52	19 49 41.4	5.3	5.1	0.36	3	1 36.8	0 18 14.21	0 51 36.5	5.7	5.6	0.37
17	1 00.7	20 44 39.68	19 31 11.7	5.3	5.1	0.36	4	1 37.3	0 22 43.77	1 22 49.7	5.7	5.6	0.37
18	1 01.9	20 49 48.57	19 12 08.0	5.3	5.2	0.36	5	1 37.9	0 27 13.26	1 54 01.5	5.8	5.6	0.37
19	1 03.1	20 54 56.20	18 52 31.2	5.3	5.2	0.36	6	1 38.4	0 31 42.73	2 25 11.3	5.8	5.6	0.37
20	1 04.3	21 00 02.54	18 32 21.9	5.3	5.2	0.36	7	1 39.0	0 36 12.21	+2 56 18.4	5.8	5.6	0.37
21	1 05.4	21 05 07.58	18 11 41.0	5.3	5.2	0.36	8	1 39.5	0 40 41.75	3 27 22.0	5.8	5.6	0.38
22	1 06.5	21 10 11.32	17 50 29.1	5.3	5.2	0.36	9	1 40.0	0 45 11.38	3 58 21.2	5.8	5.6	0.38
23	1 07.6	21 15 13.77	17 28 47.0	5.3	5.2	0.36	10	1 40.5	0 49 41.16	4 29 15.4	5.9	5.6	0.38
24	1 08.7	21 20 14.91	17 06 35.5	5.4	5.2	0.36	11	1 41.1	0 54 11.12	5 00 03.7	5.9	5.7	0.38
25	1 09.8	21 25 14.77	16 43 55.3	5.4	5.2	0.36	12	1 41.7	0 58 41.30	+5 30 45.4	5.9	5.7	0.38
26	1 10.8	21 30 13.34	16 20 47.1	5.4	5.2	0.36	13	1 42.2	1 03 11.74	6 01 20.1	5.9	5.7	0.38
27	1 11.8	21 35 10.63	15 57 11.7	5.4	5.2	0.36	14	1 42.8	1 07 42.49	6 31 46.9	5.9	5.7	0.38
28	1 12.8	21 40 06.66	15 33 10.1	5.4	5.2	0.36	15	1 43.4	1 12 13.59	7 02 05.2	6.0	5.7	0.39
29	1 13.8	21 45 01.44	15 08 42.8	5.4	5.2	0.36	16	1 44.0	1 16 45.07	7 32 14.3	6.0	5.8	0.39
30	1 14.7	21 49 54.97	14 43 50.7	5.4	5.2	0.36	17	1 44.6	1 21 17.00	+8 02 13.3	6.0	5.8	0.39
31	1 15.6	21 54 47.25	14 18 34.6	5.4	5.2	0.36	18	1 45.2	1 25 49.39	8 32 01.4	6.0	5.8	0.39
Feb. 1	1 16.5	21 59 38.32	13 52 55.4	5.4	5.2	0.36	19	1 45.8	1 30 22.28	9 01 38.0	6.0	5.8	0.39
2	1 17.4	22 04 28.19	13 26 53.8	5.4	5.3	0.36	20	1 46.4	1 34 55.73	9 31 02.3	6.0	5.9	0.39
3	1 18.3	22 09 16.89	13 00 30.8	5.4	5.3	0.36	21	1 47.0	1 39 29.78	10 00 13.6	6.0	5.9	0.40
4	1 19.1	22 14 04.43	12 33 47.2	5.4	5.3	0.36	22	1 47.7	1 44 04.44	+10 29 11.1	6.1	5.9	0.40
5	1 19.9	22 18 50.85	12 06 43.7	5.4	5.3	0.36	23	1 48.3	1 48 39.71	10 57 54.2	6.1	5.9	0.40
6	1 20.7	22 23 36.17	11 39 20.9	5.4	5.3	0.36	24	1 48.9	1 53 15.66	11 26 22.2	6.1	5.9	0.40
7	1 21.5	22 28 20.41	11 11 39.7	5.5	5.3	0.36	25	1 49.6	1 57 52.35	11 54 34.1	6.1	6.0	0.40
8	1 22.3	22 33 03.60	10 43 40.8	5.5	5.3	0.36	26	1 50.3	2 02 29.78	12 22 29.4	6.1	6.0	0.41
9	1 23.0	22 37 45.78	10 15 25.1	5.5	5.3	0.36	27	1 51.0	2 07 07.98	+12 50 07.2	6.2	6.0	0.41
10	1 23.8	22 42 26.97	9 46 53.3	5.5	5.3	0.36	28	1 51.7	2 11 46.97	13 17 26.8	6.2	6.0	0.41
11	1 24.5	22 47 07.22	9 18 06.2	5.5	5.3	0.36	29	1 52.4	2 16 26.79	13 44 27.5	6.2	6.0	0.41
12	1 25.2	22 51 46.57	8 49 04.6	5.5	5.3	0.36	30	1 53.1	2 21 07.45	14 11 08.5	6.2	6.1	0.41
13	1 25.9	22 56 25.04	8 19 49.2	5.5	5.4	0.36	31	1 53.9	2 25 48.97	14 37 29.1	6.3	6.1	0.42
14	1 26.6	23 01 02.68	-7 50 20.8	5.5	5.4	0.36	Apr. 1	1 54.7	2 30 31.38	+15 03 28.5	6.3	6.1	0.42
15	1 27.3	23 05 39.52	-7 20 40.2	5.5	5.4	0.36	2	1 55.5	2 35 14.67	+15 29 06.0	6.3	6.1	0.42

FOR TRANSIT AT WASHINGTON.

Date.	Mean Time of Transit.	Apparent Right Ascension.	Apparent Declination.	Hor. Par.	Semi- diam.	Sid. T. of S.D. Pass. Mer.	Date.	Mean Time of Transit.	Apparent Right Ascension.	Apparent Declination.	Hor. Par.	Semi- diam.	Sid. T. of S.D. Pass. Mer.
	h m	h m s	° ' "	"	"	s		h m	h m s	° ' "	"	"	s
Apr. 1	1 54.7	2 30 31.38	+15 03 28.5	6.3	6.1	0.42	May 16	2 42.8	6 16 08.60	+25 32 19.9	7.8	7.5	0.56
2	1 55.5	2 35 14.67	15 29 06.0	6.3	6.1	0.42	17	2 44.0	6 21 15.86	25 31 30.4	7.8	7.6	0.56
3	1 56.3	2 39 58.88	15 54 20.8	6.3	6.1	0.42	18	2 45.2	6 26 22.52	25 29 59.2	7.9	7.6	0.57
4	1 57.1	2 44 44.01	16 19 12.2	6.4	6.1	0.42	19	2 46.3	6 31 28.51	25 27 46.8	7.9	7.7	0.57
5	1 57.9	2 49 30.07	16 43 39.5	6.4	6.2	0.43	20	2 47.4	6 36 33.75	25 24 53.3	8.0	7.7	0.58
6	1 58.7	2 54 17.07	+17 07 41.9	6.4	6.2	0.43	21	2 48.5	6 41 38.18	+25 21 19.0	8.1	7.8	0.58
7	1 59.6	2 59 05.03	17 31 18.8	6.4	6.2	0.43	22	2 49.6	6 46 41.74	25 17 04.0	8.1	7.9	0.58
8	2 00.5	3 03 53.96	17 54 29.3	6.4	6.2	0.44	23	2 50.7	6 51 44.37	25 12 08.6	8.2	7.9	0.59
9	2 01.4	3 08 43.86	18 17 12.8	6.5	6.2	0.44	24	2 51.8	6 56 46.02	25 06 33.2	8.2	8.0	0.59
10	2 02.3	3 13 34.73	18 39 28.5	6.5	6.3	0.45	25	2 52.9	7 01 46.62	25 00 18.2	8.3	8.0	0.60
11	2 03.2	3 18 26.57	+19 01 15.9	6.5	6.3	0.45	26	2 53.9	7 06 46.09	+24 53 23.9	8.4	8.1	0.60
12	2 04.1	3 23 19.39	19 22 34.2	6.5	6.4	0.45	27	2 54.9	7 11 44.36	24 45 50.7	8.5	8.1	0.60
13	2 05.0	3 28 13.19	19 43 22.8	6.6	6.4	0.45	28	2 55.9	7 16 41.38	24 37 39.1	8.6	8.2	0.61
14	2 06.0	3 33 07.97	20 03 41.1	6.6	6.4	0.46	29	2 56.9	7 21 37.10	24 28 49.5	8.6	8.2	0.61
15	2 07.0	3 38 03.71	20 23 28.3	6.6	6.5	0.46	30	2 57.9	7 26 31.44	24 19 22.5	8.7	8.3	0.62
16	2 08.0	3 43 00.42	+20 42 43.8	6.7	6.5	0.46	31	2 58.8	7 31 24.35	+24 09 18.6	8.7	8.4	0.62
17	2 09.0	3 47 58.08	21 01 26.9	6.7	6.5	0.47	June 1	2 59.7	7 36 15.77	23 58 38.2	8.8	8.4	0.62
18	2 10.0	3 52 56.68	21 19 36.9	6.7	6.5	0.47	2	3 00.6	7 41 05.64	23 47 21.9	8.9	8.5	0.63
19	2 11.0	3 57 56.19	21 37 13.2	6.8	6.5	0.47	3	3 01.5	7 45 53.92	23 35 30.3	8.9	8.6	0.63
20	2 12.1	4 02 56.60	21 54 15.3	6.8	6.6	0.47	4	3 02.3	7 50 40.56	23 23 04.0	9.0	8.7	0.64
21	2 13.2	4 07 57.88	+22 10 42.6	6.8	6.6	0.48	5	3 03.1	7 55 25.50	+23 10 03.7	9.0	8.8	0.64
22	2 14.3	4 13 00.02	22 26 34.5	6.8	6.6	0.48	6	3 03.9	8 00 08.72	22 56 29.9	9.1	8.8	0.64
23	2 15.4	4 18 02.98	22 41 50.6	6.9	6.7	0.48	7	3 04.6	8 04 50.17	22 42 23.1	9.2	8.9	0.65
24	2 16.5	4 23 06.73	22 56 30.4	6.9	6.7	0.49	8	3 05.3	8 09 29.80	22 27 44.0	9.2	9.0	0.65
25	2 17.6	4 28 11.23	23 10 33.1	6.9	6.7	0.49	9	3 06.0	8 14 07.57	22 12 33.4	9.3	9.0	0.66
26	2 18.8	4 33 16.45	+23 23 58.5	7.0	6.8	0.49	10	3 06.7	8 18 43.46	+21 56 51.9	9.4	9.1	0.66
27	2 19.9	4 38 22.35	23 36 46.0	7.0	6.8	0.50	11	3 07.3	8 23 17.45	21 40 40.2	9.4	9.2	0.66
28	2 21.1	4 43 28.88	23 48 55.1	7.0	6.8	0.50	12	3 07.9	8 27 49.51	21 23 58.8	9.5	9.2	0.67
29	2 22.3	4 48 35.97	24 00 25.4	7.1	6.9	0.50	13	3 08.5	8 32 19.61	21 06 48.6	9.6	9.3	0.67
30	2 23.5	4 53 43.58	24 11 16.4	7.1	6.9	0.51	14	3 09.0	8 36 47.73	20 49 10.2	9.7	9.4	0.68
May 1	2 24.7	4 58 51.67	+24 21 27.7	7.2	7.0	0.51	15	3 09.5	8 41 13.85	+20 31 04.2	9.8	9.5	0.68
2	2 25.9	5 04 00.18	24 30 59.1	7.2	7.0	0.51	16	3 10.0	8 45 37.93	20 12 31.5	9.9	9.6	0.68
3	2 27.1	5 09 09.06	24 39 50.3	7.3	7.1	0.52	17	3 10.4	8 49 59.95	19 53 32.9	10.0	9.7	0.69
4	2 28.3	5 14 18.23	24 48 01.1	7.3	7.1	0.52	18	3 10.8	8 54 19.90	19 34 09.0	10.1	9.8	0.69
5	2 29.5	5 19 27.64	24 55 31.0	7.4	7.2	0.52	19	3 11.1	8 58 37.76	19 14 20.6	10.2	9.9	0.70
6	2 30.7	5 24 37.25	+25 02 19.9	7.4	7.2	0.53	20	3 11.4	9 02 53.52	+18 54 08.5	10.3	10.0	0.70
7	2 31.9	5 29 46.95	25 08 27.5	7.4	7.2	0.53	21	3 11.7	9 07 07.16	18 33 33.3	10.4	10.1	0.70
8	2 33.1	5 34 56.68	25 13 53.6	7.5	7.3	0.53	22	3 12.0	9 11 18.66	18 12 35.7	10.5	10.2	0.71
9	2 34.3	5 40 06.39	25 18 38.2	7.5	7.3	0.53	23	3 12.2	9 15 28.01	17 51 16.6	10.6	10.3	0.72
10	2 35.6	5 45 16.03	25 22 41.1	7.6	7.4	0.54	24	3 12.4	9 19 35.21	17 29 36.7	10.7	10.4	0.72
11	2 36.8	5 50 25.53	+25 26 02.2	7.6	7.4	0.54	25	3 12.5	9 23 40.22	+17 07 36.8	10.8	10.5	0.73
12	2 38.0	5 55 34.82	25 28 41.4	7.6	7.4	0.54	26	3 12.5	9 27 43.02	16 45 17.8	10.9	10.6	0.74
13	2 39.2	6 00 43.83	25 30 38.8	7.7	7.4	0.55	27	3 12.6	9 31 43.59	16 22 40.4	11.0	10.7	0.74
14	2 40.4	6 05 52.51	25 31 54.3	7.7	7.5	0.55	28	3 12.6	9 35 41.92	15 59 45.3	11.1	10.8	0.75
15	2 41.6	6 11 00.79	25 32 28.0	7.8	7.5	0.55	29	3 12.6	9 39 37.97	15 36 33.3	11.2	10.9	0.75
16	2 42.8	6 16 08.60	+25 32 19.9	7.8	7.5	0.56	30	3 12.6	9 43 31.73	+15 13 05.4	11.3	11.0	0.76
17	2 44.0	6 21 15.86	+25 31 30.4	7.8	7.6	0.56	July 1	3 12.5	9 47 23.17	+14 49 22.3	11.4	11.1	0.76

FOR TRANSIT AT WASHINGTON.

Date.	Mean Time of Transit.	Apparent Right Ascension.	Apparent Declination.	Hor. Par.	Semi- diam.	Sid.T. of S.D. Pass. Mer.	Date.	Mean Time of Transit.	Apparent Right Ascension.	Apparent Declination.	Hor. Par.	Semi- diam.	Sid.T. of S.D. Pass. Mer.
	h m	h m s	° ' "	"	"	s		h m	h m s	° ' "	"	"	s
July 1	3 12.5	9 47 23.17	+14 49 22.3	11.4	11.1	0.76	Aug. 16	2 15.5	11 51 31.80	- 3 53 40.9	21.4	20.7	1.38
2	3 12.4	9 51 12.28	14 25 24.8	11.5	11.2	0.77	17	2 12.6	11 52 32.11	4 12 19.1	21.7	21.0	1.40
3	3 12.2	9 54 59.01	14 01 13.7	11.7	11.3	0.78	18	2 09.6	11 53 25.82	4 30 19.5	22.0	21.3	1.43
4	3 12.0	9 58 43.36	13 36 49.8	11.8	11.4	0.79	19	2 06.4	11 54 12.71	4 47 40.3	22.4	21.7	1.45
5	3 11.8	10 02 25.31	13 12 13.9	12.0	11.6	0.79	20	2 03.2	11 54 52.61	5 04 19.0	22.7	22.0	1.48
6	3 11.5	10 06 04.85	+12 47 26.7	12.1	11.7	0.80	21	1 59.8	11 55 25.33	- 5 20 13.1	23.1	22.4	1.50
7	3 11.2	10 09 41.94	12 22 29.0	12.2	11.9	0.80	22	1 56.3	11 55 50.67	5 35 20.2	23.4	22.7	1.53
8	3 10.8	10 13 16.57	11 57 21.5	12.3	12.0	0.82	23	1 52.6	11 56 08.47	5 49 37.7	23.8	23.1	1.55
9	3 10.4	10 16 48.71	11 32 05.1	12.4	12.2	0.82	24	1 48.8	11 56 18.54	6 03 03.3	24.2	23.5	1.58
10	3 10.0	10 20 18.34	11 06 40.6	12.6	12.3	0.83	25	1 44.9	11 56 20.71	6 15 34.2	24.6	23.8	1.60
11	3 09.5	10 23 45.44	+10 41 08.5	12.7	12.5	0.84	26	1 40.9	11 56 14.83	- 6 27 07.8	25.0	24.2	1.63
12	3 09.0	10 27 09.97	10 15 30.0	12.9	12.6	0.85	27	1 36.7	11 56 00.79	6 37 41.2	25.4	24.6	1.65
13	3 08.4	10 30 31.90	9 49 45.8	13.0	12.8	0.86	28	1 32.4	11 55 38.51	6 47 11.8	25.8	25.0	1.68
14	3 07.8	10 33 51.22	9 23 56.7	13.2	12.9	0.87	29	1 28.0	11 55 07.92	6 55 36.8	26.2	25.4	1.71
15	3 07.1	10 37 07.88	8 58 03.4	13.4	13.1	0.88	30	1 23.5	11 54 28.99	7 02 53.5	26.5	25.7	1.73
16	3 06.4	10 40 21.85	+ 8 32 06.8	13.5	13.3	0.89	31	1 18.8	11 53 41.73	- 7 08 59.4	26.9	26.1	1.76
17	3 05.6	10 43 33.11	8 06 07.4	13.7	13.4	0.90	Sept. 1	1 14.0	11 52 46.17	7 13 51.8	27.3	26.4	1.78
18	3 04.8	10 46 41.59	7 40 06.1	13.9	13.6	0.91	2	1 09.0	11 51 42.51	7 17 28.4	27.7	26.8	1.81
19	3 04.0	10 49 47.27	7 14 03.7	14.1	13.7	0.92	3	1 03.7	11 50 30.89	7 19 47.1	28.1	27.2	1.83
20	3 03.1	10 52 50.08	6 48 01.2	14.3	13.9	0.93	4	0 58.4	11 49 11.49	7 20 46.5	28.4	27.5	1.85
21	3 02.1	10 55 49.99	+ 6 21 59.4	14.5	14.1	0.94	5	0 53.0	11 47 44.59	- 7 20 24.8	28.7	27.9	1.87
22	3 01.1	10 58 46.93	5 55 59.3	14.7	14.3	0.95	6	0 47.5	11 46 10.59	7 18 41.3	29.0	28.2	1.89
23	3 00.1	11 01 40.84	5 30 01.8	14.9	14.5	0.96	7	0 41.9	11 44 29.88	7 15 34.6	29.3	28.5	1.91
24	2 59.0	11 04 31.63	5 04 07.8	15.1	14.7	0.97	8	0 36.3	11 42 42.96	7 11 05.2	29.6	28.8	1.93
25	2 57.9	11 07 19.24	4 38 18.1	15.3	14.9	0.99	9	0 30.6	11 40 50.38	7 05 13.1	29.9	29.0	1.95
26	2 56.7	11 10 03.57	+ 4 12 33.7	15.5	15.1	1.00	10	0 24.8	11 38 52.72	- 6 57 59.7	30.1	29.3	1.96
27	2 55.4	11 12 44.55	3 46 55.6	15.7	15.3	1.01	11	0 18.8	11 36 50.66	6 49 26.1	30.4	29.5	1.98
28	2 54.1	11 15 22.06	3 21 25.0	15.9	15.5	1.03	12	0 12.7	11 34 44.90	6 39 34.9	30.6	29.7	1.99
29	2 52.7	11 17 56.01	2 56 02.8	16.1	15.7	1.04	13	0 06.5	11 32 36.20	6 28 28.5	30.8	29.9	2.00
30	2 51.3	11 20 26.29	2 30 50.0	16.4	15.9	1.06	14	0 00.4	11 30 25.38	6 16 10.6	30.9	30.0	2.01
31	2 49.8	11 22 52.79	+ 2 05 47.8	16.6	16.1	1.07	14	23 54.3	11 28 13.27	- 6 02 45.3	31.0	30.1	2.01
Aug. 1	2 48.3	11 25 15.39	1 40 57.2	16.9	16.4	1.09	15	23 48.2	11 26 00.69	5 48 17.4	31.1	30.2	2.02
2	2 46.7	11 27 33.97	1 16 19.5	17.1	16.6	1.11	16	23 42.1	11 23 48.49	5 32 51.6	31.2	30.3	2.02
3	2 45.0	11 29 48.38	0 51 55.9	17.4	16.9	1.13	17	23 36.0	11 21 37.52	5 16 34.0	31.2	30.3	2.03
4	2 43.2	11 31 58.52	0 27 47.5	17.7	17.2	1.14	18	23 30.0	11 19 28.59	4 59 30.0	31.1	30.2	2.03
5	2 41.4	11 34 04.25	+ 0 03 55.6	18.0	17.4	1.16	19	23 24.0	11 17 22.56	- 4 41 46.0	31.1	30.2	2.02
6	2 39.5	11 36 05.42	- 0 19 38.6	18.3	17.7	1.17	20	23 18.0	11 15 20.15	4 23 28.8	31.0	30.1	2.01
7	2 37.5	11 38 01.89	0 42 53.6	18.6	17.9	1.19	21	23 12.1	11 13 22.14	4 04 45.2	30.9	30.0	2.01
8	2 35.4	11 39 53.51	1 05 48.1	18.9	18.2	1.21	22	23 06.2	11 11 29.21	3 45 42.0	30.8	29.9	2.00
9	2 33.2	11 41 40.12	1 28 20.7	19.1	18.5	1.23	23	23 00.4	11 09 42.04	3 26 25.6	30.6	29.7	1.99
10	2 30.9	11 43 21.56	- 1 50 30.0	19.4	18.8	1.25	24	22 54.8	11 08 01.21	- 3 07 03.1	30.4	29.5	1.98
11	2 28.5	11 44 57.65	2 12 14.2	19.7	19.1	1.27	25	22 49.3	11 06 27.30	2 47 40.8	30.2	29.3	1.96
12	2 26.1	11 46 28.22	2 33 31.8	20.0	19.4	1.29	26	22 44.0	11 05 00.79	2 28 25.1	30.0	29.1	1.95
13	2 23.6	11 47 53.09	2 54 20.9	20.3	19.7	1.31	27	22 38.8	11 03 42.09	2 09 21.9	29.7	28.9	1.93
14	2 21.0	11 49 12.09	3 14 39.9	20.7	20.1	1.33	28	22 33.7	11 02 31.61	1 50 37.0	29.4	28.5	1.91
15	2 18.3	11 50 25.06	- 3 34 27.1	21.0	20.4	1.35	29	22 28.8	11 01 29.61	- 1 32 15.8	29.1	28.2	1.89
16	2 15.5	11 51 31.80	- 3 53 40.9	21.4	20.7	1.38	30	22 24.0	11 00 36.35	- 1 14 23.3	28.8	27.9	1.87

FOR TRANSIT AT WASHINGTON.

Date.	Mean Time of Transit.	Apparent Right Ascension.	Apparent Declination.	Hor. Par.	Semi- diam.	Sid. T. of S.D. Pass. Mer.	Date.	Mean Time of Transit.	Apparent Right Ascension.	Apparent Declination.	Hor. Par.	Semi- diam.	Sid. T. of S.D. Pass. Mer.
	h m	h m s	° ' "	"	"	s		h m	h m s	° ' "	"	"	s
Oct. 1	22 19.3	10 59 52.04	- 0 57 03.6	28.5	27.6	1.85	Nov. 16	20 48.4	12 30 13.50	- 2 05 51.6	14.7	14.3	0.95
2	22 14.7	10 59 16.78	0 40 21.1	28.2	27.3	1.83	17	20 48.0	12 33 46.47	2 22 24.7	14.5	14.1	0.93
3	22 10.2	10 58 50.68	0 24 19.1	27.8	27.0	1.81	18	20 47.7	12 37 21.46	2 39 19.7	14.3	13.9	0.92
4	22 05.9	10 58 33.77	- 0 09 01.0	27.4	26.6	1.79	19	20 47.4	12 40 58.40	2 56 35.5	14.1	13.7	0.91
5	22 01.8	10 58 26.02	+ 0 05 30.4	27.0	26.3	1.76	20	20 47.1	12 44 37.23	3 14 11.2	14.0	13.5	0.90
6	21 58.0	10 58 27.39	+ 0 19 12.5	26.6	25.9	1.74	21	20 46.8	12 48 17.90	3 32 05.8	13.8	13.4	0.89
7	21 54.4	10 58 37.82	0 32 04.1	26.3	25.6	1.71	22	20 46.6	12 52 00.37	3 50 18.1	13.7	13.3	0.88
8	21 50.9	10 58 57.15	0 44 03.0	25.9	25.2	1.69	23	20 46.4	12 55 44.60	4 08 47.2	13.6	13.1	0.87
9	21 47.5	10 59 25.26	0 55 08.4	25.5	24.8	1.67	24	20 46.2	12 59 30.56	4 27 32.2	13.4	13.0	0.86
10	21 44.2	11 00 01.97	1 05 19.1	25.1	24.4	1.64	25	20 46.0	13 03 18.21	4 46 32.1	13.3	12.8	0.86
11	21 40.9	11 00 47.09	+ 1 14 34.6	24.7	24.0	1.62	26	20 45.9	13 07 07.52	5 05 45.8	13.1	12.7	0.85
12	21 37.7	11 01 40.40	1 22 53.9	24.4	23.7	1.59	27	20 45.8	13 10 58.46	5 25 12.4	13.0	12.5	0.84
13	21 34.7	11 02 41.67	1 30 17.4	24.0	23.3	1.56	28	20 45.8	13 14 51.01	5 44 50.9	12.8	12.4	0.84
14	21 31.9	11 03 50.67	1 36 44.9	23.7	23.0	1.53	29	20 45.7	13 18 45.14	6 04 40.6	12.7	12.2	0.83
15	21 29.3	11 05 07.14	1 42 16.8	23.3	22.7	1.51	30	20 45.7	13 22 40.84	6 24 40.4	12.5	12.1	0.82
16	21 26.8	11 06 30.84	+ 1 46 53.4	23.0	22.3	1.48	Dec. 1	20 45.7	13 26 38.09	6 44 48.9	12.4	12.0	0.81
17	21 24.4	11 08 01.52	1 50 35.4	22.6	22.0	1.47	2	20 45.8	13 30 36.89	7 05 05.4	12.2	11.8	0.80
18	21 22.1	11 09 38.90	1 53 23.3	22.3	21.6	1.44	3	20 45.9	13 34 37.22	7 25 29.3	12.1	11.7	0.79
19	21 19.9	11 11 22.76	1 55 17.8	21.9	21.3	1.42	4	20 46.0	13 38 39.07	7 45 59.4	12.0	11.6	0.78
20	21 17.8	11 13 12.82	1 56 19.8	21.6	21.0	1.40	5	20 46.1	13 42 42.44	8 06 34.8	11.8	11.5	0.77
21	21 15.8	11 15 08.87	+ 1 56 30.1	21.2	20.6	1.38	6	20 46.2	13 46 47.32	8 27 14.7	11.7	11.4	0.77
22	21 13.9	11 17 10.67	1 55 49.6	20.9	20.3	1.36	7	20 46.4	13 50 53.70	8 47 57.9	11.6	11.3	0.76
23	21 12.0	11 19 17.97	1 54 19.3	20.6	20.0	1.34	8	20 46.6	13 55 01.57	9 08 43.5	11.5	11.2	0.75
24	21 10.2	11 21 30.58	1 52 00.1	20.3	19.7	1.32	9	20 46.8	13 59 10.91	9 29 30.7	11.4	11.1	0.75
25	21 08.6	11 23 48.28	1 48 53.0	20.0	19.4	1.30	10	20 47.0	14 03 21.73	9 50 18.3	11.3	11.0	0.74
26	21 07.1	11 26 10.87	+ 1 44 59.1	19.7	19.1	1.28	11	20 47.2	14 07 34.01	10 11 05.4	11.2	10.9	0.74
27	21 05.7	11 28 38.17	1 40 19.3	19.4	18.8	1.26	12	20 47.5	14 11 47.75	10 31 51.2	11.1	10.8	0.73
28	21 04.3	11 31 09.98	1 34 54.6	19.1	18.5	1.24	13	20 47.8	14 16 02.94	10 52 34.6	11.0	10.7	0.72
29	21 03.0	11 33 46.12	1 28 46.2	18.8	18.3	1.22	14	20 48.1	14 20 19.57	11 13 14.6	10.9	10.6	0.72
30	21 01.7	11 36 26.41	1 21 55.2	18.5	18.0	1.20	15	20 48.5	14 24 37.63	11 33 50.5	10.8	10.5	0.71
31	21 00.5	11 39 10.69	+ 1 14 22.6	18.2	17.8	1.18	16	20 48.9	14 28 57.11	11 54 21.1	10.7	10.4	0.71
Nov. 1	20 59.3	11 41 58.81	1 06 09.5	18.0	17.5	1.17	17	20 49.3	14 33 18.02	12 14 45.6	10.6	10.3	0.70
2	20 58.2	11 44 50.63	0 57 16.9	17.8	17.3	1.15	18	20 49.7	14 37 40.35	12 35 03.0	10.5	10.2	0.69
3	20 57.2	11 47 45.99	0 47 46.0	17.5	17.0	1.14	19	20 50.1	14 42 04.10	12 55 12.6	10.4	10.1	0.69
4	20 56.3	11 50 44.76	0 37 37.7	17.3	16.8	1.12	20	20 50.6	14 46 29.26	13 15 13.3	10.3	10.0	0.68
5	20 55.4	11 53 46.82	+ 0 26 53.1	17.0	16.5	1.11	21	20 51.1	14 50 55.84	13 35 04.2	10.2	9.9	0.68
6	20 54.5	11 56 52.03	0 15 33.4	16.8	16.3	1.09	22	20 51.6	14 55 23.84	13 54 44.4	10.1	9.8	0.68
7	20 53.7	12 00 00.28	+ 0 03 39.7	16.5	16.0	1.08	23	20 52.2	14 59 53.25	14 14 12.9	10.0	9.7	0.67
8	20 52.9	12 03 11.45	- 0 08 46.9	16.3	15.8	1.06	24	20 52.8	15 04 24.06	14 33 29.1	9.9	9.7	0.67
9	20 52.2	12 06 25.44	0 21 45.3	16.1	15.6	1.05	25	20 53.4	15 08 56.29	14 52 31.9	9.8	9.6	0.66
10	20 51.5	12 09 42.12	- 0 35 14.4	15.9	15.4	1.04	26	20 54.0	15 13 29.93	15 11 20.5	9.8	9.5	0.66
11	20 50.9	12 13 01.40	0 49 13.1	15.7	15.2	1.02	27	20 54.6	15 18 04.98	15 29 53.9	9.7	9.5	0.66
12	20 50.4	12 16 23.18	1 03 40.2	15.5	15.0	1.01	28	20 55.3	15 22 41.45	15 48 11.4	9.6	9.4	0.65
13	20 49.9	12 19 47.37	1 18 34.7	15.3	14.8	0.99	29	20 56.0	15 27 19.32	16 06 12.2	9.6	9.3	0.65
14	20 49.4	12 23 13.87	1 33 55.5	15.1	14.6	0.98	30	20 56.7	15 31 58.60	16 23 55.3	9.5	9.3	0.64
15	20 48.9	12 26 42.61	- 1 49 41.5	14.9	14.4	0.96	31	20 57.4	15 36 39.28	16 41 19.8	9.4	9.2	0.64
16	20 48.4	12 30 13.50	- 2 05 51.6	14.7	14.3	0.95	32	20 58.2	15 41 21.38	16 58 25.2	9.4	9.1	0.64

FOR TRANSIT AT WASHINGTON.

Date.	Mean Time of Transit.	Apparent Right Ascension.	Apparent Declination.	Hor. Par.	Semi- diam.	Sid. T. of S.D. Pass. Mer.	Date.	Mean Time of Transit.	Apparent Right Ascension.	Apparent Declination.	Hor. Par.	Semi- diam.	Sid. T. of S.D. Pass. Mer.
	h m	h m s	° ' "	"	"	s		h m	h m s	° ' "	"	"	s
Jan. 0	17 43.3	12 22 57.47	+ 0 07 22.0	6.9	4.0	0.27	Feb. 15	15 24.1	13 04 45.13	- 3 29 06.9	10.4	6.0	0.40
1	17 40.8	12 24 25.64	- 0 01 07.9	6.9	4.0	0.27	16	15 20.2	13 04 51.32	3 28 47.9	10.5	6.0	0.40
2	17 38.4	12 25 52.72	0 09 30.0	7.0	4.0	0.27	17	15 16.3	13 04 54.81	3 28 13.3	10.6	6.1	0.41
3	17 35.9	12 27 18.73	0 17 44.3	7.1	4.0	0.27	18	15 12.4	13 04 55.55	3 27 23.1	10.7	6.1	0.41
4	17 33.4	12 28 43.62	0 25 50.7	7.2	4.1	0.28	19	15 08.5	13 04 53.51	3 26 17.1	10.8	6.2	0.42
5	17 30.8	12 30 07.39	- 0 33 49.0	7.2	4.1	0.28	20	15 04.4	13 04 48.66	- 3 24 55.3	10.9	6.3	0.42
6	17 28.2	12 31 30.01	0 41 39.2	7.2	4.1	0.28	21	15 00.3	13 04 40.97	3 23 17.6	11.0	6.3	0.43
7	17 25.6	12 32 51.45	0 49 21.0	7.3	4.2	0.28	22	14 56.2	13 04 30.42	3 21 23.9	11.1	6.4	0.43
8	17 23.0	12 34 11.71	0 56 54.2	7.3	4.2	0.28	23	14 52.1	13 04 16.99	3 19 14.3	11.2	6.4	0.43
9	17 20.4	12 35 30.76	1 04 18.7	7.4	4.2	0.29	24	14 48.0	13 04 00.65	3 16 48.8	11.3	6.5	0.44
10	17 17.8	12 36 48.55	- 1 11 34.4	7.5	4.3	0.29	25	14 43.8	13 03 41.38	- 3 14 07.4	11.4	6.5	0.44
11	17 15.1	12 38 05.09	1 18 41.2	7.5	4.3	0.29	26	14 39.5	13 03 19.17	3 11 10.0	11.5	6.6	0.45
12	17 12.4	12 39 20.33	1 25 38.8	7.6	4.3	0.29	27	14 35.1	13 02 54.02	3 07 56.6	11.6	6.6	0.45
13	17 09.7	12 40 34.24	1 32 26.9	7.7	4.4	0.29	28	14 30.7	13 02 25.93	3 04 27.6	11.7	6.7	0.45
14	17 07.0	12 41 46.79	1 39 05.5	7.8	4.4	0.30	Mar. 1	14 26.2	13 01 54.91	3 00 43.1	11.8	6.7	0.46
15	17 04.3	12 42 57.94	- 1 45 34.4	7.9	4.5	0.30	2	14 21.7	13 01 20.97	- 2 56 43.2	11.9	6.8	0.46
16	17 01.5	12 44 07.68	1 51 53.5	7.9	4.5	0.30	3	14 17.1	13 00 44.14	2 52 28.2	12.0	6.8	0.46
17	16 58.7	12 45 15.97	1 58 02.5	8.0	4.5	0.30	4	14 12.5	13 00 04.43	2 47 58.2	12.1	6.9	0.47
18	16 55.9	12 46 22.76	2 04 01.2	8.0	4.6	0.31	5	14 07.9	12 59 21.89	2 43 13.6	12.2	6.9	0.47
19	16 53.1	12 47 28.01	2 09 49.4	8.1	4.6	0.31	6	14 03.3	12 58 36.53	2 38 14.6	12.3	7.0	0.47
20	16 50.2	12 48 31.69	- 2 15 27.0	8.2	4.7	0.31	7	13 58.6	12 57 48.41	- 2 33 01.8	12.4	7.0	0.48
21	16 47.3	12 49 33.76	2 20 53.6	8.2	4.7	0.31	8	13 53.8	12 56 57.55	2 27 35.3	12.5	7.1	0.48
22	16 44.4	12 50 34.16	2 26 09.2	8.3	4.8	0.31	9	13 49.0	12 56 04.02	2 21 55.6	12.6	7.1	0.48
23	16 41.4	12 51 32.87	2 31 13.5	8.4	4.8	0.32	10	13 44.1	12 55 07.85	2 16 02.9	12.7	7.2	0.48
24	16 38.4	12 52 29.85	2 36 06.2	8.5	4.9	0.32	11	13 39.2	12 54 09.12	2 09 57.9	12.8	7.2	0.49
25	16 35.4	12 53 25.05	- 2 40 47.2	8.6	4.9	0.32	12	13 34.2	12 53 07.88	- 2 03 41.0	12.8	7.3	0.49
26	16 32.4	12 54 18.45	2 45 16.4	8.7	5.0	0.32	13	13 29.2	12 52 04.22	1 57 12.8	12.9	7.3	0.49
27	16 29.3	12 55 09.99	2 49 33.6	8.7	5.0	0.33	14	13 24.2	12 50 58.18	1 50 33.8	12.9	7.4	0.50
28	16 26.2	12 55 59.64	2 53 38.6	8.8	5.1	0.34	15	13 19.2	12 49 49.86	1 43 44.5	13.0	7.4	0.50
29	16 23.1	12 56 47.36	2 57 31.2	8.9	5.1	0.34	16	13 14.1	12 48 39.34	1 36 45.8	13.1	7.5	0.50
30	16 19.8	12 57 33.10	- 3 01 11.4	9.0	5.2	0.35	17	13 08.9	12 47 26.73	- 1 29 38.2	13.2	7.5	0.51
31	16 16.6	12 58 16.83	3 04 38.7	9.0	5.2	0.35	18	13 03.7	12 46 12.12	1 22 22.3	13.2	7.6	0.51
Feb. 1	16 13.4	12 58 58.51	3 07 53.1	9.1	5.3	0.35	19	12 58.5	12 44 55.64	1 14 59.1	13.3	7.6	0.51
2	16 10.1	12 59 38.11	3 10 54.5	9.2	5.3	0.35	20	12 53.3	12 43 37.42	1 07 29.2	13.4	7.7	0.52
3	16 06.8	13 00 15.57	3 13 42.5	9.3	5.4	0.36	21	12 48.1	12 42 17.54	0 59 53.8	13.4	7.7	0.52
4	16 03.5	13 00 50.86	- 3 16 17.0	9.4	5.4	0.36	22	12 42.8	12 40 56.16	- 0 52 13.5	13.5	7.8	0.52
5	16 00.1	13 01 23.97	3 18 38.1	9.4	5.5	0.36	23	12 37.5	12 39 33.42	0 44 29.4	13.5	7.8	0.52
6	15 56.7	13 01 54.83	3 20 45.5	9.5	5.5	0.37	24	12 32.2	12 38 09.47	0 36 42.2	13.6	7.8	0.52
7	15 53.2	13 02 23.41	3 22 38.9	9.6	5.6	0.37	25	12 26.8	12 36 44.48	0 28 53.2	13.6	7.8	0.52
8	15 49.7	13 02 49.67	3 24 18.3	9.7	5.6	0.38	26	12 21.4	12 35 18.60	0 21 03.3	13.6	7.8	0.52
9	15 46.2	13 03 13.58	- 3 25 43.5	9.8	5.7	0.38	27	12 16.0	12 33 51.99	- 0 13 13.4	13.7	7.9	0.53
10	15 42.6	13 03 35.09	3 26 54.3	9.9	5.7	0.39	28	12 10.6	12 32 24.80	- 0 05 24.6	13.7	7.9	0.53
11	15 39.0	13 03 54.15	3 27 50.6	10.0	5.8	0.39	29	12 05.3	12 30 57.22	+ 0 02 22.0	13.7	7.9	0.53
12	15 35.3	13 04 10.73	3 28 32.1	10.1	5.8	0.39	30	11 59.9	12 29 29.41	0 10 05.5	13.7	7.9	0.53
13	15 31.6	13 04 24.79	3 28 58.8	10.2	5.9	0.40	31	11 54.5	12 28 01.55	0 17 44.8	13.8	7.9	0.53
14	15 27.9	13 04 36.27	- 3 29 10.5	10.3	5.9	0.40	Apr. 1	11 49.1	12 26 33.82	+ 0 25 18.7	13.8	7.9	0.53
15	15 24.1	13 04 45.13	- 3 29 06.9	10.4	6.0	0.40	2	11 43.7	12 25 06.39	+ 0 32 46.4	13.8	7.9	0.53

FOR TRANSIT AT WASHINGTON.

Date.	Mean Time of Transit.	Apparent Right Ascension.	Apparent Declination.	Hor. Par.	Semi- diam.	Sid. T. of S.D. Pass. Mer.	Date.	Mean Time of Transit.	Apparent Right Ascension.	Apparent Declination.	Hor. Par.	Semi- diam.	Sid. T. of S.D. Pass. Mer.
	h m	h m s	° ' "	"	"	s		h m	h m s	° ' "	"	"	s
Apr. 1	11 49.1	12 26 33.82	+ 0 25 18.7	13.8	7.9	0.53	May 17	8 15.8	11 54 00.71	+ 1 54 07.8	10.9	6.3	0.43
2	11 43.7	12 25 06.39	0 32 46.4	13.8	7.9	0.53	18	8 12.2	11 54 20.45	1 49 29.4	10.8	6.2	0.42
3	11 38.3	12 23 39.43	0 40 07.0	13.8	7.9	0.53	19	8 08.7	11 54 42.67	1 44 36.2	10.7	6.2	0.42
4	11 32.9	12 22 13.10	0 47 19.6	13.8	7.9	0.53	20	8 05.1	11 55 07.34	1 39 28.8	10.6	6.1	0.42
5	11 27.6	12 20 47.57	0 54 23.1	13.8	7.9	0.53	21	8 01.6	11 55 34.43	1 34 07.4	10.6	6.1	0.41
6	11 22.3	12 19 22.98	+ 1 01 16.8	13.8	7.9	0.53	22	7 58.2	11 56 03.90	+ 1 28 32.3	10.5	6.0	0.41
7	11 16.9	12 17 59.48	1 07 59.8	13.8	7.9	0.53	23	7 54.8	11 56 35.72	1 22 43.6	10.4	6.0	0.41
8	11 11.6	12 16 37.21	1 14 31.2	13.7	7.8	0.52	24	7 51.4	11 57 09.84	1 16 41.6	10.4	5.9	0.40
9	11 06.4	12 15 16.30	1 20 50.3	13.7	7.8	0.52	25	7 48.1	11 57 46.25	1 10 26.5	10.3	5.9	0.40
10	11 01.1	12 13 56.90	1 26 56.5	13.7	7.8	0.52	26	7 44.8	11 58 24.92	1 03 58.5	10.2	5.8	0.40
11	10 55.9	12 12 39.12	+ 1 32 49.3	13.6	7.8	0.52	27	7 41.6	11 59 05.80	+ 0 57 17.8	10.2	5.8	0.39
12	10 50.7	12 11 23.09	1 38 28.1	13.6	7.7	0.52	28	7 38.4	11 59 48.86	0 50 24.7	10.1	5.7	0.39
13	10 45.5	12 10 08.92	1 43 52.1	13.6	7.7	0.52	29	7 35.2	12 00 34.04	0 43 19.6	10.0	5.7	0.39
14	10 40.4	12 08 56.72	1 49 01.0	13.5	7.7	0.51	30	7 32.0	12 01 21.31	0 36 02.5	9.9	5.6	0.38
15	10 35.3	12 07 46.61	1 53 54.3	13.5	7.6	0.51	31	7 28.9	12 02 10.63	0 28 33.8	9.8	5.6	0.38
16	10 30.3	12 06 38.65	+ 1 58 31.4	13.4	7.6	0.51	June 1	7 25.8	12 03 01.96	+ 0 20 53.7	9.8	5.5	0.38
17	10 25.3	12 05 32.96	2 02 51.8	13.4	7.6	0.51	2	7 22.7	12 03 55.25	0 13 02.5	9.7	5.5	0.37
18	10 20.3	12 04 29.62	2 06 55.3	13.3	7.6	0.51	3	7 19.7	12 04 50.46	+ 0 05 00.5	9.6	5.5	0.37
19	10 15.3	12 03 28.73	2 10 41.4	13.3	7.5	0.50	4	7 16.8	12 05 47.54	- 0 03 12.0	9.6	5.4	0.37
20	10 10.4	12 02 30.36	2 14 09.8	13.2	7.5	0.50	5	7 13.8	12 06 46.47	0 11 34.9	9.5	5.4	0.36
21	10 05.5	12 01 34.58	+ 2 17 20.5	13.1	7.5	0.50	6	7 11.0	12 07 47.20	- 0 20 08.0	9.5	5.3	0.36
22	10 00.7	12 00 41.44	2 20 13.2	13.1	7.4	0.50	7	7 08.1	12 08 49.70	0 28 50.8	9.4	5.3	0.36
23	9 56.0	11 59 51.01	2 22 47.6	13.0	7.4	0.49	8	7 05.2	12 09 53.93	0 37 43.2	9.3	5.2	0.35
24	9 51.2	11 59 03.33	2 25 03.5	12.9	7.3	0.49	9	7 02.3	12 10 59.87	0 46 45.0	9.2	5.2	0.35
25	9 46.6	11 58 18.46	2 27 00.8	12.8	7.3	0.49	10	6 59.5	12 12 07.46	0 55 56.1	9.1	5.2	0.35
26	9 41.9	11 57 36.43	+ 2 28 39.4	12.7	7.2	0.48	11	6 56.7	12 13 16.69	- 1 05 16.0	9.1	5.1	0.35
27	9 37.4	11 56 57.30	2 29 59.1	12.7	7.2	0.48	12	6 53.9	12 14 27.51	1 14 44.8	9.0	5.1	0.35
28	9 32.8	11 56 21.09	2 31 00.0	12.6	7.1	0.48	13	6 51.2	12 15 39.90	1 24 22.2	8.9	5.1	0.34
29	9 28.3	11 55 47.82	2 31 42.2	12.5	7.1	0.48	14	6 48.5	12 16 53.84	1 34 08.0	8.8	5.0	0.34
30	9 23.9	11 55 17.50	2 32 05.6	12.4	7.0	0.47	15	6 45.8	12 18 09.29	1 44 02.0	8.8	5.0	0.34
May 1	9 19.5	11 54 50.14	+ 2 32 10.6	12.3	7.0	0.47	16	6 43.2	12 19 26.25	- 1 54 04.0	8.7	5.0	0.34
2	9 15.2	11 54 25.73	2 31 57.2	12.2	7.0	0.47	17	6 40.6	12 20 44.68	2 04 13.8	8.6	4.9	0.34
3	9 10.9	11 54 04.27	2 31 25.6	12.1	6.9	0.46	18	6 38.0	12 22 04.56	2 14 31.3	8.6	4.9	0.33
4	9 06.7	11 53 45.74	2 30 36.1	12.0	6.9	0.46	19	6 35.4	12 23 25.88	2 24 56.3	8.5	4.9	0.33
5	9 02.5	11 53 30.12	2 29 28.7	11.9	6.8	0.46	20	6 32.8	12 24 48.60	2 35 28.7	8.5	4.9	0.33
6	8 58.3	11 53 17.40	+ 2 28 03.5	11.9	6.8	0.45	21	6 30.3	12 26 12.71	- 2 46 08.3	8.4	4.8	0.33
7	8 54.2	11 53 07.56	2 26 20.8	11.8	6.7	0.45	22	6 27.8	12 27 38.19	2 56 54.9	8.4	4.8	0.33
8	8 50.2	11 53 00.57	2 24 20.9	11.7	6.7	0.45	23	6 25.3	12 29 05.02	3 07 48.3	8.3	4.8	0.33
9	8 46.2	11 52 56.40	2 22 03.9	11.6	6.7	0.45	24	6 22.8	12 30 33.19	3 18 48.3	8.2	4.8	0.32
10	8 42.2	11 52 55.03	2 19 30.3	11.5	6.6	0.44	25	6 20.4	12 32 02.69	3 29 54.8	8.2	4.7	0.32
11	8 38.3	11 52 56.41	+ 2 16 40.2	11.5	6.6	0.44	26	6 17.9	12 33 33.48	- 3 41 07.7	8.2	4.7	0.32
12	8 34.4	11 53 00.51	2 13 33.9	11.4	6.5	0.44	27	6 15.5	12 35 05.54	3 52 26.8	8.1	4.7	0.32
13	8 30.6	11 53 07.30	2 10 11.6	11.3	6.5	0.44	28	6 13.2	12 36 38.84	4 03 51.8	8.1	4.7	0.32
14	8 26.8	11 53 16.75	2 06 33.7	11.2	6.4	0.43	29	6 10.8	12 38 13.37	4 15 22.6	8.1	4.7	0.31
15	8 23.1	11 53 28.82	2 02 40.2	11.1	6.4	0.43	30	6 08.4	12 39 49.10	4 26 58.9	8.0	4.6	0.31
16	8 19.4	11 53 43.49	+ 1 58 31.5	11.0	6.3	0.43	July 1	6 06.1	12 41 26.02	- 4 38 40.5	7.9	4.6	0.31
17	8 15.8	11 54 00.71	+ 1 54 07.8	10.9	6.3	0.43	2	6 03.8	12 43 04.11	- 4 50 27.3	7.9	4.5	0.31

FOR TRANSIT AT WASHINGTON.

Date.	Mean Time of Transit.	Apparent Right Ascension.	Apparent Declination.	Hor. Par.	Semi-diam.	Sid. T. of S.D. Pass. Mer.	Date.	Mean Time of Transit.	Apparent Right Ascension.	Apparent Declination.	Hor. Par.	Semi-diam.	Sid. T. of S.D. Pass. Mer.
	h m	h m s	° ' "	"	"	s		h m	h m s	° ' "	"	"	s
June 13	18 05.8	23 32 09.26	-4 16 48.6	1.8	19.2	1.37	July 28	15 13.0	23 36 15.03	-4 04 59.2	2.1	22.2	1.57
14	18 02.2	23 32 29.50	4 14 56.8	1.8	19.2	1.37	29	15 08.9	23 36 04.31	4 06 26.7	2.1	22.3	1.58
15	17 58.6	23 32 49.14	4 13 08.9	1.8	19.3	1.38	30	15 04.7	23 35 52.92	4 07 58.5	2.1	22.3	1.58
16	17 55.0	23 33 08.17	4 11 25.1	1.8	19.4	1.38	31	15 00.6	23 35 40.86	4 09 34.4	2.1	22.4	1.59
17	17 51.4	23 33 26.57	4 09 45.4	1.8	19.4	1.39	Aug. 1	14 56.5	23 35 28.13	4 11 14.4	2.1	22.4	1.59
18	17 47.7	23 33 44.33	-4 08 09.8	1.8	19.5	1.39	2	14 52.3	23 35 14.74	-4 12 58.5	2.1	22.5	1.60
19	17 44.1	23 34 01.46	4 06 38.4	1.8	19.6	1.40	3	14 48.2	23 35 00.69	4 14 46.7	2.1	22.5	1.60
20	17 40.4	23 34 17.96	4 05 11.2	1.8	19.7	1.40	4	14 44.0	23 34 45.99	4 16 38.8	2.1	22.6	1.61
21	17 36.8	23 34 33.81	4 03 48.3	1.8	19.7	1.41	5	14 39.8	23 34 30.65	4 18 34.7	2.1	22.6	1.61
22	17 33.1	23 34 49.00	4 02 29.6	1.8	19.8	1.41	6	14 35.6	23 34 14.68	4 20 34.6	2.1	22.7	1.62
23	17 29.4	23 35 03.54	-4 01 15.1	1.8	19.9	1.42	7	14 31.4	23 33 58.08	-4 22 38.3	2.1	22.7	1.62
24	17 25.7	23 35 17.42	4 00 05.0	1.9	19.9	1.42	8	14 27.2	23 33 40.87	4 24 45.6	2.1	22.8	1.62
25	17 22.0	23 35 30.63	3 58 59.2	1.9	20.0	1.43	9	14 23.0	23 33 23.07	4 26 56.5	2.1	22.8	1.63
26	17 18.3	23 35 43.17	3 57 57.8	1.9	20.1	1.43	10	14 18.7	23 33 04.67	4 29 11.1	2.1	22.9	1.63
27	17 14.5	23 35 55.03	3 57 00.7	1.9	20.1	1.44	11	14 14.5	23 32 45.68	4 31 29.2	2.2	22.9	1.63
28	17 10.8	23 36 06.22	-3 56 08.1	1.9	20.2	1.44	12	14 10.2	23 32 26.11	-4 33 50.5	2.2	23.0	1.64
29	17 07.0	23 36 16.72	3 55 20.0	1.9	20.3	1.45	13	14 05.9	23 32 05.97	4 36 15.1	2.2	23.0	1.64
30	17 03.3	23 36 26.54	3 54 36.3	1.9	20.3	1.45	14	14 01.7	23 31 45.28	4 38 43.1	2.2	23.1	1.64
July 1	16 59.5	23 36 35.67	3 53 57.1	1.9	20.4	1.46	15	13 57.4	23 31 24.05	4 41 14.3	2.2	23.1	1.64
2	16 55.7	23 36 44.11	3 53 22.3	1.9	20.5	1.46	16	13 53.1	23 31 02.28	4 43 48.4	2.2	23.2	1.65
3	16 51.9	23 36 51.86	-3 52 52.1	1.9	20.5	1.47	17	13 48.8	23 30 40.00	-4 46 25.4	2.2	23.2	1.65
4	16 48.1	23 36 58.91	3 52 26.4	1.9	20.6	1.47	18	13 44.5	23 30 17.23	4 49 05.3	2.2	23.2	1.65
5	16 44.3	23 37 05.26	3 52 05.2	1.9	20.7	1.48	19	13 40.2	23 29 53.96	4 51 48.0	2.2	23.3	1.66
6	16 40.4	23 37 10.92	3 51 48.5	1.9	20.7	1.48	20	13 35.8	23 29 30.21	4 54 33.3	2.2	23.3	1.66
7	16 36.6	23 37 15.87	3 51 36.4	1.9	20.8	1.48	21	13 31.5	23 29 06.01	4 57 21.1	2.2	23.3	1.66
8	16 32.7	23 37 20.12	-3 51 28.9	1.9	20.8	1.49	22	13 27.2	23 28 41.39	-5 00 11.3	2.2	23.4	1.67
9	16 28.8	23 37 23.67	3 51 26.0	1.9	20.9	1.49	23	13 22.8	23 28 16.34	5 03 03.8	2.2	23.4	1.67
10	16 24.9	23 37 26.50	3 51 27.6	2.0	21.0	1.50	24	13 18.5	23 27 50.88	5 05 58.3	2.2	23.4	1.67
11	16 21.0	23 37 28.62	3 51 33.8	2.0	21.0	1.50	25	13 14.1	23 27 25.03	5 08 54.8	2.2	23.4	1.68
12	16 17.1	23 37 30.03	3 51 44.6	2.0	21.1	1.50	26	13 09.7	23 26 58.82	5 11 53.2	2.2	23.4	1.68
13	16 13.2	23 37 30.73	-3 51 59.9	2.0	21.2	1.51	27	13 05.4	23 26 32.27	-5 14 53.4	2.2	23.5	1.68
14	16 09.3	23 37 30.70	3 52 19.9	2.0	21.2	1.51	28	13 01.0	23 26 05.40	5 17 55.1	2.2	23.5	1.68
15	16 05.3	23 37 29.95	3 52 44.5	2.0	21.3	1.52	29	12 56.6	23 25 38.22	5 20 58.2	2.2	23.5	1.69
16	16 01.4	23 37 28.49	3 53 13.7	2.0	21.3	1.52	30	12 52.2	23 25 10.75	5 24 02.8	2.2	23.6	1.69
17	15 57.4	23 37 26.32	3 53 47.6	2.0	21.4	1.53	31	12 47.8	23 24 43.02	5 27 08.6	2.2	23.6	1.69
18	15 53.4	23 37 23.42	-3 54 26.0	2.0	21.5	1.53	Sept. 1	12 43.4	23 24 15.03	-5 30 15.4	2.2	23.6	1.69
19	15 49.4	23 37 19.80	3 55 09.0	2.0	21.6	1.54	2	12 39.0	23 23 46.82	5 33 23.1	2.2	23.6	1.69
20	15 45.4	23 37 15.46	3 55 56.6	2.0	21.6	1.54	3	12 34.6	23 23 18.41	5 36 31.8	2.2	23.6	1.69
21	15 41.4	23 37 10.40	3 56 48.8	2.0	21.7	1.55	4	12 30.2	23 22 49.81	5 39 41.1	2.2	23.6	1.69
22	15 37.4	23 37 04.62	3 57 45.5	2.0	21.8	1.55	5	12 25.8	23 22 21.05	5 42 50.8	2.2	23.7	1.69
23	15 33.4	23 36 58.12	-3 58 46.7	2.0	21.9	1.55	6	12 21.4	23 21 52.15	-5 46 00.9	2.2	23.7	1.69
24	15 29.3	23 36 50.91	3 59 52.4	2.0	21.9	1.56	7	12 17.0	23 21 23.11	5 49 11.3	2.2	23.7	1.69
25	15 25.2	23 36 42.99	4 01 02.5	2.0	22.0	1.56	8	12 12.6	23 20 53.97	5 52 21.8	2.2	23.7	1.69
26	15 21.2	23 36 34.37	4 02 17.1	2.1	22.1	1.57	9	12 08.1	23 20 24.75	5 55 32.1	2.2	23.7	1.69
27	15 17.1	23 36 25.05	4 03 36.0	2.1	22.1	1.57	10	12 03.7	23 19 55.46	5 58 42.4	2.2	23.7	1.69
28	15 13.0	23 36 15.03	-4 04 59.2	2.1	22.2	1.57	11	11 59.3	23 19 26.13	-6 01 52.5	2.2	23.7	1.69
29	15 08.9	23 36 04.31	4 06 26.7	2.1	22.3	1.58	12	11 54.9	23 18 56.78	-6 05 02.1	2.2	23.7	1.69

FOR TRANSIT AT WASHINGTON.

Date.	Mean Time of Transit.	Apparent Right Ascension.	Apparent Declination.	Hor. Par.	Semi- diam.	Sid. T. of S.D. Pass. Mer.	Date.	Mean Time of Transit.	Apparent Right Ascension.	Apparent Declination.	Hor. Par.	Semi- diam.	Sid. T. of S.D. Pass. Mer.
	h m	h m s	° ' "	"	"	s		h m	h m s	° ' "	"	"	s
Sept. 12	11 54.9	23 18 56.78	-6 05 02.1	2.2	23.7	1.69	Oct. 28	8 37.1	23 01 59.53	-7 46 29.9	2.1	22.0	1.58
13	11 50.4	23 18 27.43	6 08 11.1	2.2	23.7	1.69	29	8 33.0	23 01 50.76	7 47 10.6	2.1	22.0	1.57
14	11 46.0	23 17 58.10	6 11 19.4	2.2	23.7	1.69	30	8 29.0	23 01 42.73	7 47 46.5	2.0	21.9	1.57
15	11 41.6	23 17 28.81	6 14 26.9	2.2	23.7	1.69	31	8 24.9	23 01 35.45	7 48 17.6	2.0	21.8	1.56
16	11 37.2	23 16 59.60	6 17 33.5	2.2	23.7	1.69	Nov. 1	8 20.9	23 01 28.91	7 48 44.0	2.0	21.8	1.56
17	11 32.8	23 16 30.48	-6 20 38.6	2.2	23.7	1.69	2	8 16.8	23 01 23.11	-7 49 05.5	2.0	21.7	1.55
18	11 28.4	23 16 01.47	6 23 42.4	2.2	23.7	1.69	3	8 12.8	23 01 18.07	7 49 22.4	2.0	21.6	1.55
19	11 23.9	23 15 32.59	6 26 44.9	2.2	23.7	1.69	4	8 08.8	23 01 13.78	7 49 34.5	2.0	21.6	1.54
20	11 19.5	23 15 03.89	6 29 45.8	2.2	23.7	1.69	5	8 04.8	23 01 10.25	7 49 41.9	2.0	21.5	1.54
21	11 15.1	23 14 35.37	6 32 44.9	2.2	23.6	1.69	6	8 00.9	23 01 07.47	7 49 44.5	2.0	21.5	1.53
22	11 10.7	23 14 07.05	-6 35 42.1	2.2	23.6	1.69	7	7 56.9	23 01 05.45	-7 49 42.2	2.0	21.4	1.53
23	11 06.3	23 13 38.95	6 38 37.4	2.2	23.6	1.69	8	7 52.9	23 01 04.19	7 49 35.1	2.0	21.3	1.52
24	11 01.9	23 13 11.10	6 41 30.6	2.2	23.6	1.69	9	7 49.0	23 01 03.68	7 49 23.2	2.0	21.3	1.52
25	10 57.5	23 12 43.52	6 44 21.4	2.2	23.6	1.69	10	7 45.1	23 01 03.92	7 49 06.6	2.0	21.2	1.51
26	10 53.2	23 12 16.24	6 47 09.9	2.2	23.5	1.68	11	7 41.2	23 01 04.93	7 48 45.2	2.0	21.1	1.51
27	10 48.8	23 11 49.28	-6 49 56.0	2.2	23.5	1.68	12	7 37.2	23 01 06.70	-7 48 19.0	2.0	21.1	1.50
28	10 44.4	23 11 22.65	6 52 39.4	2.2	23.5	1.68	13	7 33.4	23 01 09.23	7 47 48.0	2.0	21.0	1.50
29	10 40.0	23 10 56.38	6 55 19.9	2.2	23.4	1.68	14	7 29.5	23 01 12.52	7 47 12.2	1.9	20.9	1.49
30	10 35.7	23 10 30.47	6 57 57.6	2.2	23.4	1.67	15	7 25.6	23 01 16.58	7 46 31.7	1.9	20.9	1.49
Oct. 1	10 31.3	23 10 04.95	7 00 32.6	2.2	23.4	1.67	16	7 21.8	23 01 21.39	7 45 46.5	1.9	20.8	1.49
2	10 27.0	23 09 39.85	-7 03 04.5	2.2	23.4	1.67	17	7 17.9	23 01 26.96	-7 44 56.5	1.9	20.7	1.48
3	10 22.6	23 09 15.17	7 05 33.1	2.2	23.3	1.67	18	7 14.1	23 01 33.29	7 44 01.8	1.9	20.7	1.48
4	10 18.3	23 08 50.93	7 07 58.5	2.2	23.3	1.66	19	7 10.3	23 01 40.38	7 43 02.4	1.9	20.6	1.48
5	10 14.0	23 08 27.15	7 10 20.6	2.2	23.2	1.66	20	7 06.5	23 01 48.22	7 41 58.3	1.9	20.5	1.47
6	10 09.6	23 08 03.85	7 12 39.3	2.2	23.2	1.65	21	7 02.7	23 01 56.80	7 40 49.5	1.9	20.5	1.47
7	10 05.3	23 07 41.03	-7 14 54.4	2.2	23.1	1.65	22	6 58.9	23 02 06.13	-7 39 36.2	1.9	20.4	1.46
8	10 01.0	23 07 18.72	7 17 05.8	2.2	23.1	1.65	23	6 55.2	23 02 16.20	7 38 18.3	1.9	20.3	1.46
9	9 56.7	23 06 56.93	7 19 13.7	2.2	23.0	1.64	24	6 51.4	23 02 26.99	7 36 55.8	1.9	20.2	1.45
10	9 52.4	23 06 35.68	7 21 17.9	2.2	23.0	1.64	25	6 47.7	23 02 38.52	7 35 28.8	1.9	20.2	1.45
11	9 48.2	23 06 14.97	7 23 18.1	2.2	22.9	1.64	26	6 43.9	23 02 50.78	7 33 57.3	1.9	20.1	1.44
12	9 43.9	23 05 54.83	-7 25 14.4	2.2	22.9	1.63	27	6 40.2	23 03 03.76	-7 32 21.3	1.9	20.0	1.44
13	9 39.7	23 05 35.25	7 27 06.7	2.1	22.8	1.63	28	6 36.3	23 03 17.45	7 30 41.0	1.9	20.0	1.43
14	9 35.4	23 05 16.27	7 28 54.8	2.1	22.8	1.63	29	6 32.8	23 03 31.85	7 28 56.2	1.9	19.9	1.43
15	9 31.2	23 04 57.90	7 30 38.8	2.1	22.7	1.63	30	6 29.1	23 03 46.96	7 27 07.0	1.9	19.8	1.42
16	9 27.0	23 04 40.16	7 32 18.7	2.1	22.7	1.62	Dec. 1	6 25.5	23 04 02.76	7 25 13.5	1.8	19.8	1.42
17	9 22.7	23 04 23.04	-7 33 54.5	2.1	22.6	1.62	2	6 21.8	23 04 19.25	-7 23 15.7	1.8	19.7	1.41
18	9 18.5	23 04 06.57	7 35 25.8	2.1	22.6	1.62	3	6 18.2	23 04 36.42	7 21 13.7	1.8	19.6	1.41
19	9 14.3	23 03 50.75	7 36 52.6	2.1	22.5	1.62	4	6 14.5	23 04 54.28	7 19 07.6	1.8	19.6	1.40
20	9 10.2	23 03 35.60	7 38 15.1	2.1	22.5	1.61	5	6 10.9	23 05 12.81	7 16 57.2	1.8	19.5	1.40
21	9 06.0	23 03 21.12	7 39 33.2	2.1	22.4	1.61	6	6 07.3	23 05 32.00	7 14 42.7	1.8	19.5	1.39
22	9 01.8	23 03 07.35	-7 40 46.6	2.1	22.4	1.61	7	6 03.7	23 05 51.85	-7 12 24.1	1.8	19.4	1.38
23	8 57.7	23 02 54.27	7 41 55.4	2.1	22.3	1.60	8	6 00.1	23 06 12.34	7 10 01.3	1.8	19.3	1.38
24	8 53.5	23 02 41.89	7 42 59.7	2.1	22.3	1.60	9	5 56.5	23 06 33.49	7 07 34.3	1.8	19.3	1.37
25	8 49.4	23 02 30.21	7 43 59.3	2.1	22.2	1.59	10	5 53.0	23 06 55.28	7 05 03.6	1.8	19.2	1.37
26	8 45.3	23 02 19.26	7 44 54.2	2.1	22.2	1.59	11	5 49.4	23 07 17.71	7 02 28.8	1.8	19.1	1.36
27	8 41.2	23 02 09.03	-7 45 44.4	2.1	22.1	1.58	12	5 45.9	23 07 40.79	-6 59 50.1	1.8	19.1	1.36
28	8 37.1	23 01 59.53	7 46 29.9	2.1	22.0	1.58	13	5 42.3	23 08 04.49	-6 57 07.5	1.8	19.0	1.36

FOR TRANSIT AT WASHINGTON.

Date.	Mean Time of Transit.	Apparent Right Ascension.	Apparent Declination.	Hor. Par.	Semi- diam.	Sid. T. of S.D. Pass. Mer.	Date.	Mean Time of Transit.	Apparent Right Ascension.	Apparent Declination.	Hor. Par.	Semi- diam.	Sid. T. of S.D. Pass. Mer.
	h m	h m s	° ' "	"	"	s		h m	h m s	° ' "	"	"	s
May 1	18 09.7	20 46 28.78	-18 26 13.9	0.9	7.9	0.60	June 16	15 07.5	20 45 10.92	-18 37 21.7	0.9	8.5	0.64
2	18 05.9	20 46 35.82	-18 25 54.2	0.9	7.9	0.60	17	15 03.4	20 45 00.56	-18 38 09.6	1.0	8.5	0.64
3	18 02.1	20 46 42.47	-18 25 36.0	0.9	7.9	0.60	18	14 59.3	20 44 49.88	-18 38 58.6	1.0	8.5	0.64
4	17 58.2	20 46 48.73	-18 25 19.2	0.9	7.9	0.60	19	14 55.2	20 44 38.87	-18 39 48.8	1.0	8.5	0.64
5	17 54.4	20 46 54.60	-18 25 04.0	0.9	7.9	0.60	20	14 51.1	20 44 27.55	-18 40 40.1	1.0	8.5	0.64
6	17 50.6	20 47 00.09	-18 24 50.4	0.9	7.9	0.60	21	14 47.0	20 44 15.91	-18 41 32.6	1.0	8.5	0.64
7	17 46.7	20 47 05.19	-18 24 38.4	0.9	8.0	0.60	22	14 42.8	20 44 03.97	-18 42 26.2	1.0	8.5	0.64
8	17 42.8	20 47 09.89	-18 24 27.8	0.9	8.0	0.60	23	14 38.7	20 43 51.73	-18 43 20.8	1.0	8.5	0.64
9	17 39.0	20 47 14.21	-18 24 18.7	0.9	8.0	0.60	24	14 34.6	20 43 39.20	-18 44 16.4	1.0	8.5	0.64
10	17 35.1	20 47 18.13	-18 24 11.2	0.9	8.0	0.60	25	14 30.4	20 43 26.39	-18 45 12.9	1.0	8.6	0.64
11	17 31.3	20 47 21.66	-18 24 05.3	0.9	8.0	0.61	26	14 26.3	20 43 13.29	-18 46 10.4	1.0	8.6	0.64
12	17 27.4	20 47 24.81	-18 24 00.9	0.9	8.1	0.61	27	14 22.1	20 42 59.91	-18 47 09.0	1.0	8.6	0.65
13	17 23.5	20 47 27.56	-18 23 58.0	0.9	8.1	0.61	28	14 18.0	20 42 46.27	-18 48 08.5	1.0	8.6	0.65
14	17 19.6	20 47 29.92	-18 23 56.7	0.9	8.1	0.61	29	14 13.8	20 42 32.37	-18 49 08.8	1.0	8.6	0.65
15	17 15.7	20 47 31.88	-18 23 57.0	0.9	8.1	0.61	30	14 09.6	20 42 18.22	-18 50 10.0	1.0	8.6	0.65
16	17 11.8	20 47 33.44	-18 23 58.9	0.9	8.1	0.61	July 1	14 05.5	20 42 03.82	-18 51 11.9	1.0	8.6	0.65
17	17 07.9	20 47 34.61	-18 24 02.3	0.9	8.1	0.61	2	14 01.3	20 41 49.18	-18 52 14.6	1.0	8.6	0.65
18	17 04.0	20 47 35.39	-18 24 07.3	0.9	8.1	0.61	3	13 57.1	20 41 34.31	-18 53 18.1	1.0	8.6	0.65
19	17 00.0	20 47 35.77	-18 24 13.9	0.9	8.1	0.61	4	13 52.9	20 41 19.21	-18 54 22.3	1.0	8.6	0.65
20	16 56.1	20 47 35.75	-18 24 21.9	0.9	8.1	0.61	5	13 48.7	20 41 03.89	-18 55 27.2	1.0	8.6	0.65
21	16 52.2	20 47 35.34	-18 24 31.5	0.9	8.2	0.62	6	13 44.5	20 40 48.37	-18 56 32.8	1.0	8.7	0.65
22	16 48.2	20 47 34.54	-18 24 42.8	0.9	8.2	0.62	7	13 40.4	20 40 32.64	-18 57 39.0	1.0	8.7	0.65
23	16 44.3	20 47 33.34	-18 24 55.6	0.9	8.2	0.62	8	13 36.2	20 40 16.71	-18 58 45.8	1.0	8.7	0.65
24	16 40.3	20 47 31.74	-18 25 09.9	0.9	8.2	0.62	9	13 32.0	20 40 00.59	-18 59 53.1	1.0	8.7	0.65
25	16 36.3	20 47 29.75	-18 25 25.7	0.9	8.2	0.62	10	13 27.8	20 39 44.29	-19 01 01.0	1.0	8.7	0.65
26	16 32.4	20 47 27.36	-18 25 43.1	0.9	8.2	0.62	11	13 23.6	20 39 27.82	-19 02 09.3	1.0	8.7	0.65
27	16 28.4	20 47 24.59	-18 26 02.0	0.9	8.2	0.62	12	13 19.4	20 39 11.19	-19 03 18.1	1.0	8.7	0.65
28	16 24.4	20 47 21.43	-18 26 22.5	0.9	8.2	0.62	13	13 15.1	20 38 54.38	-19 04 27.3	1.0	8.7	0.65
29	16 20.4	20 47 17.88	-18 26 44.5	0.9	8.3	0.62	14	13 10.9	20 38 37.42	-19 05 36.9	1.0	8.7	0.66
30	16 16.4	20 47 13.95	-18 27 08.0	0.9	8.3	0.62	15	13 06.7	20 38 20.33	-19 06 46.9	1.0	8.7	0.66
31	16 12.4	20 47 09.63	-18 27 33.0	0.9	8.3	0.62	16	13 02.5	20 38 03.11	-19 07 57.2	1.0	8.7	0.66
June 1	16 08.4	20 47 04.94	-18 27 59.4	0.9	8.3	0.62	17	12 58.3	20 37 45.75	-19 09 07.8	1.0	8.7	0.66
2	16 04.4	20 46 59.87	-18 28 27.3	0.9	8.3	0.62	18	12 54.1	20 37 28.28	-19 10 18.6	1.0	8.7	0.66
3	16 00.4	20 46 54.42	-18 28 56.5	0.9	8.3	0.63	19	12 49.8	20 37 10.70	-19 11 29.7	1.0	8.7	0.66
4	15 56.4	20 46 48.60	-18 29 27.2	0.9	8.3	0.63	20	12 45.6	20 36 53.02	-19 12 41.0	1.0	8.7	0.66
5	15 52.3	20 46 42.41	-18 29 59.3	0.9	8.3	0.63	21	12 41.4	20 36 35.24	-19 13 52.5	1.0	8.7	0.66
6	15 48.3	20 46 35.86	-18 30 32.9	0.9	8.4	0.63	22	12 37.1	20 36 17.37	-19 15 04.1	1.0	8.7	0.66
7	15 44.2	20 46 28.95	-18 31 07.8	0.9	8.4	0.63	23	12 32.9	20 35 59.44	-19 16 15.7	1.0	8.7	0.66
8	15 40.2	20 46 21.68	-18 31 44.1	0.9	8.4	0.63	24	12 28.7	20 35 41.45	-19 17 27.3	1.0	8.7	0.66
9	15 36.1	20 46 14.05	-18 32 21.7	0.9	8.4	0.63	25	12 24.4	20 35 23.40	-19 18 38.9	1.0	8.7	0.66
10	15 32.1	20 46 06.07	-18 33 00.7	0.9	8.4	0.63	26	12 20.2	20 35 05.30	-19 19 50.5	1.0	8.7	0.66
11	15 28.0	20 45 57.73	-18 33 41.0	0.9	8.4	0.63	27	12 16.0	20 34 47.17	-19 21 01.9	1.0	8.7	0.66
12	15 23.9	20 45 49.04	-18 34 22.6	0.9	8.4	0.64	28	12 11.7	20 34 29.03	-19 22 13.2	1.0	8.7	0.66
13	15 19.8	20 45 40.02	-18 35 05.5	0.9	8.5	0.64	29	12 07.5	20 34 10.87	-19 23 24.4	1.0	8.7	0.66
14	15 15.7	20 45 30.66	-18 35 49.6	0.9	8.5	0.64	30	12 03.3	20 33 52.71	-19 24 35.5	1.0	8.7	0.66
15	15 11.6	20 45 20.96	-18 36 35.0	0.9	8.5	0.64	31	11 59.0	20 33 34.55	-19 25 46.3	1.0	8.7	0.66
16	15 07.5	20 45 10.92	-18 37 21.7	0.9	8.5	0.64	Aug. 1	11 54.8	20 33 16.40	-19 26 56.8	1.0	8.7	0.66

FOR TRANSIT AT WASHINGTON.

Date.	Mean Time of Transit.	Apparent Right Ascension.	Apparent Declination.	Hor. Par.	Semi- diam.	Sid. T. of S.D. Pass. Mer.	Date.	Mean Time of Transit.	Apparent Right Ascension.	Apparent Declination.	Hor. Par.	Semi- diam.	Sid. T. of S.D. Pass. Mer.
	h m	h m s	° ' "	"	"	s		h m	h m s	° ' "	"	"	s
Aug. 1	11 54.8	20 33 16.40	-19 26 56.8	1.0	8.7	0.66	Sept. 15	8 46.9	20 22 12.82	-20 07 53.4	0.9	8.4	0.64
2	11 50.5	20 32 58.27	-19 28 07.1	1.0	8.7	0.66	16	8 42.8	20 22 04.22	-20 08 23.9	0.9	8.4	0.64
3	11 46.3	20 32 40.17	-19 29 17.1	1.0	8.7	0.66	17	8 38.7	20 21 55.98	-20 08 53.1	0.9	8.4	0.64
4	11 42.1	20 32 22.12	-19 30 26.7	1.0	8.7	0.66	18	8 34.6	20 21 48.11	-20 09 21.0	0.9	8.4	0.64
5	11 37.8	20 32 04.12	-19 31 36.0	1.0	8.7	0.66	19	8 30.6	20 21 40.61	-20 09 47.5	0.9	8.4	0.64
6	11 33.6	20 31 46.16	-19 32 44.9	1.0	8.7	0.66	20	8 26.5	20 21 33.48	-20 10 12.7	0.9	8.4	0.64
7	11 29.4	20 31 28.27	-19 33 53.4	1.0	8.7	0.66	21	8 22.5	20 21 26.74	-20 10 36.6	0.9	8.4	0.64
8	11 25.2	20 31 10.46	-19 35 01.4	1.0	8.7	0.66	22	8 18.5	20 21 20.39	-20 10 59.2	0.9	8.4	0.64
9	11 20.9	20 30 52.73	-19 36 08.8	1.0	8.7	0.66	23	8 14.4	20 21 14.43	-20 11 20.4	0.9	8.4	0.63
10	11 16.7	20 30 35.09	-19 37 15.8	1.0	8.7	0.66	24	8 10.4	20 21 08.86	-20 11 40.2	0.9	8.3	0.63
11	11 12.5	20 30 17.56	-19 38 22.2	1.0	8.7	0.66	25	8 06.4	20 21 03.69	-20 11 58.6	0.9	8.3	0.63
12	11 08.3	20 30 00.14	-19 39 28.0	1.0	8.7	0.66	26	8 02.4	20 20 58.90	-20 12 15.7	0.9	8.3	0.63
13	11 04.1	20 29 42.84	-19 40 33.1	1.0	8.7	0.66	27	7 58.4	20 20 54.51	-20 12 31.4	0.9	8.3	0.63
14	10 59.9	20 29 25.66	-19 41 37.6	1.0	8.7	0.66	28	7 54.4	20 20 50.53	-20 12 45.8	0.9	8.3	0.63
15	10 55.6	20 29 08.61	-19 42 41.5	1.0	8.7	0.66	29	7 50.4	20 20 46.94	-20 12 58.8	0.9	8.3	0.63
16	10 51.4	20 28 51.71	-19 43 44.6	1.0	8.7	0.66	30	7 46.4	20 20 43.76	-20 13 10.4	0.9	8.3	0.63
17	10 47.2	20 28 34.98	-19 44 47.0	1.0	8.7	0.66	Oct. 1	7 42.4	20 20 40.98	-20 13 20.5	0.9	8.2	0.63
18	10 43.0	20 28 18.41	-19 45 48.6	1.0	8.7	0.66	2	7 38.4	20 20 38.61	-20 13 29.3	0.9	8.2	0.63
19	10 38.8	20 28 02.02	-19 46 49.5	1.0	8.7	0.66	3	7 34.5	20 20 36.64	-20 13 36.8	0.9	8.2	0.62
20	10 34.6	20 27 45.81	-19 47 49.5	1.0	8.7	0.66	4	7 30.5	20 20 35.09	-20 13 42.8	0.9	8.2	0.62
21	10 30.4	20 27 29.78	-19 48 48.6	1.0	8.7	0.66	5	7 26.6	20 20 33.95	-20 13 47.4	0.9	8.2	0.62
22	10 26.2	20 27 13.94	-19 49 46.9	1.0	8.7	0.66	6	7 22.6	20 20 33.21	-20 13 50.7	0.9	8.2	0.62
23	10 22.0	20 26 58.31	-19 50 44.3	1.0	8.7	0.66	7	7 18.7	20 20 32.88	-20 13 52.6	0.9	8.2	0.62
24	10 17.8	20 26 42.90	-19 51 40.8	1.0	8.6	0.65	8	7 14.8	20 20 32.97	-20 13 53.1	0.9	8.2	0.62
25	10 13.7	20 26 27.71	-19 52 36.4	1.0	8.6	0.65	9	7 10.8	20 20 33.48	-20 13 52.2	0.9	8.2	0.62
26	10 09.5	20 26 12.75	-19 53 31.1	1.0	8.6	0.65	10	7 06.9	20 20 34.39	-20 13 49.9	0.9	8.1	0.62
27	10 05.3	20 25 58.03	-19 54 24.7	1.0	8.6	0.65	11	7 03.0	20 20 35.71	-20 13 46.2	0.9	8.1	0.61
28	10 01.1	20 25 43.57	-19 55 17.3	1.0	8.6	0.65	12	6 59.1	20 20 37.45	-20 13 41.1	0.9	8.1	0.61
29	9 57.0	20 25 29.37	-19 56 08.9	1.0	8.6	0.65	13	6 55.2	20 20 39.62	-20 13 34.5	0.9	8.1	0.61
30	9 52.8	20 25 15.42	-19 56 59.5	1.0	8.6	0.65	14	6 51.3	20 20 42.19	-20 13 26.6	0.9	8.1	0.61
31	9 48.6	20 25 01.74	-19 57 49.0	1.0	8.6	0.65	15	6 47.4	20 20 45.18	-20 13 17.3	0.9	8.1	0.61
Sept. 1	9 44.5	20 24 48.34	-19 58 37.4	1.0	8.6	0.65	16	6 43.6	20 20 48.58	-20 13 06.5	0.9	8.1	0.61
2	9 40.3	20 24 35.22	-19 59 24.7	1.0	8.6	0.65	17	6 39.7	20 20 52.40	-20 12 54.4	0.9	8.0	0.61
3	9 36.2	20 24 22.39	-20 00 10.9	1.0	8.6	0.65	18	6 35.8	20 20 56.64	-20 12 40.9	0.9	8.0	0.61
4	9 32.0	20 24 09.85	-20 00 55.9	1.0	8.6	0.65	19	6 32.0	20 21 01.30	-20 12 25.9	0.9	8.0	0.61
5	9 27.9	20 23 57.61	-20 01 39.8	1.0	8.5	0.64	20	6 28.1	20 21 06.36	-20 12 09.6	0.9	8.0	0.61
6	9 23.8	20 23 45.67	-20 02 22.6	1.0	8.5	0.64	21	6 24.3	20 21 11.84	-20 11 51.9	0.9	8.0	0.61
7	9 19.7	20 23 34.04	-20 03 04.3	1.0	8.5	0.64	22	6 20.4	20 21 17.73	-20 11 32.8	0.9	8.0	0.61
8	9 15.5	20 23 22.73	-20 03 44.7	1.0	8.5	0.64	23	6 16.6	20 21 24.03	-20 11 12.3	0.9	8.0	0.61
9	9 11.4	20 23 11.74	-20 04 23.9	1.0	8.5	0.64	24	6 12.8	20 21 30.75	-20 10 50.3	0.9	7.9	0.61
10	9 07.3	20 23 01.07	-20 05 01.9	1.0	8.5	0.64	25	6 09.0	20 21 37.88	-20 10 27.0	0.9	7.9	0.61
11	9 03.2	20 22 50.73	-20 05 38.8	1.0	8.5	0.64	26	6 05.2	20 21 45.40	-20 10 02.4	0.9	7.9	0.60
12	8 59.1	20 22 40.73	-20 06 14.4	1.0	8.5	0.64	27	6 01.4	20 21 53.32	-20 09 36.4	0.9	7.9	0.60
13	8 55.0	20 22 31.08	-20 06 48.7	0.9	8.5	0.64	28	5 57.6	20 22 01.65	-20 09 09.0	0.9	7.9	0.60
14	8 50.9	20 22 21.78	-20 07 21.7	0.9	8.5	0.64	29	5 53.8	20 22 10.38	-20 08 40.3	0.9	7.9	0.60
15	8 46.9	20 22 12.82	-20 07 53.4	0.9	8.4	0.64	30	5 50.0	20 22 19.49	-20 08 10.2	0.9	7.9	0.60
16	8 42.8	20 22 04.22	-20 08 23.9	0.9	8.4	0.64	31	5 46.2	20 22 28.98	-20 07 38.7	0.9	7.8	0.60

FOR TRANSIT AT WASHINGTON.

Date.	Mean Time of Transit.	Apparent Right Ascension.	Apparent Declination.	Hor. Par.	Semi- diam.	Sid.T. of S.D. Pass. Mer.	Date.	Mean Time of Transit.	Apparent Right Ascension.	Apparent Declination.	Hor. Par.	Semi- diam.	Sid.T. of S.D. Pass. Mer.
	h m	h m s	° ' "	"	"	s		h m	h m s	° ' "	"	"	s
Mar. 15	18 09.0	17 40 31.38	-23 29 42.2	0.5	1.7	0.13	Apr. 30	15 06.9	17 39 16.88	-23 29 49.5	0.5	1.8	0.13
16	18 05.1	17 40 34.76	23 29 44.7	0.5	1.7	0.13	May 1	15 02.9	17 39 10.46	23 29 47.2	0.5	1.8	0.13
17	18 01.3	17 40 37.91	23 29 47.1	0.5	1.7	0.13	2	14 58.8	17 39 03.86	23 29 44.8	0.5	1.8	0.13
18	17 57.4	17 40 40.84	23 29 49.4	0.5	1.7	0.13	3	14 54.8	17 38 57.08	23 29 42.2	0.5	1.8	0.13
19	17 53.4	17 40 43.53	23 29 51.6	0.5	1.7	0.13	4	14 50.7	17 38 50.14	23 29 39.6	0.5	1.8	0.13
20	17 49.6	17 40 46.00	-23 29 53.7	0.5	1.7	0.13	5	14 46.7	17 38 43.04	-23 29 36.9	0.5	1.8	0.13
21	17 45.7	17 40 48.24	23 29 55.7	0.5	1.7	0.13	6	14 42.6	17 38 35.78	23 29 34.1	0.5	1.8	0.13
22	17 41.8	17 40 50.26	23 29 57.6	0.5	1.7	0.13	7	14 38.6	17 38 28.35	23 29 31.2	0.5	1.8	0.13
23	17 37.9	17 40 52.04	23 29 59.3	0.5	1.8	0.13	8	14 34.5	17 38 20.78	23 29 28.1	0.5	1.8	0.13
24	17 34.0	17 40 53.59	23 30 00.9	0.5	1.8	0.13	9	14 30.4	17 38 13.06	23 29 24.9	0.5	1.8	0.13
25	17 30.1	17 40 54.92	-23 30 02.5	0.5	1.8	0.13	10	14 26.4	17 38 05.19	-23 29 21.6	0.5	1.8	0.13
26	17 26.2	17 40 56.02	23 30 04.0	0.5	1.8	0.13	11	14 22.4	17 37 57.17	23 29 18.2	0.5	1.8	0.13
27	17 22.3	17 40 56.89	23 30 05.4	0.5	1.8	0.13	12	14 18.3	17 37 49.01	23 29 14.7	0.5	1.8	0.13
28	17 18.4	17 40 57.52	23 30 06.6	0.5	1.8	0.13	13	14 14.2	17 37 40.72	23 29 11.1	0.5	1.8	0.13
29	17 14.4	17 40 57.93	23 30 07.7	0.5	1.8	0.13	14	14 10.1	17 37 32.29	23 29 07.4	0.5	1.8	0.13
30	17 10.5	17 40 58.11	-23 30 08.8	0.5	1.8	0.13	15	14 06.1	17 37 23.72	-23 29 03.6	0.5	1.8	0.13
31	17 06.6	17 40 58.07	23 30 09.8	0.5	1.8	0.13	16	14 02.0	17 37 15.03	23 28 59.6	0.5	1.8	0.13
Apr. 1	17 02.6	17 40 57.80	23 30 10.7	0.5	1.8	0.13	17	13 57.9	17 37 06.22	23 28 55.6	0.5	1.8	0.13
2	16 58.7	17 40 57.31	23 30 11.4	0.5	1.8	0.13	18	13 53.8	17 36 57.29	23 28 51.5	0.5	1.8	0.13
3	16 54.7	17 40 56.59	23 30 12.0	0.5	1.8	0.13	19	13 49.8	17 36 48.23	23 28 47.3	0.5	1.8	0.13
4	16 50.8	17 40 55.64	-23 30 12.5	0.5	1.8	0.13	20	13 45.7	17 36 39.06	-23 28 43.0	0.5	1.8	0.13
5	16 46.8	17 40 54.47	23 30 12.9	0.5	1.8	0.13	21	13 41.6	17 36 29.79	23 28 38.6	0.5	1.8	0.13
6	16 42.9	17 40 53.08	23 30 13.2	0.5	1.8	0.13	22	13 37.5	17 36 20.41	23 28 34.1	0.5	1.8	0.13
7	16 38.9	17 40 51.48	23 30 13.4	0.5	1.8	0.13	23	13 33.4	17 36 10.92	23 28 29.5	0.5	1.8	0.13
8	16 35.0	17 40 49.65	23 30 13.5	0.5	1.8	0.13	24	13 29.3	17 36 01.34	23 28 24.7	0.5	1.8	0.13
9	16 31.0	17 40 47.60	-23 30 13.5	0.5	1.8	0.13	25	13 25.2	17 35 51.66	-23 28 19.9	0.5	1.8	0.13
10	16 27.0	17 40 45.34	23 30 13.4	0.5	1.8	0.13	26	13 21.1	17 35 41.89	23 28 15.0	0.5	1.8	0.13
11	16 23.1	17 40 42.87	23 30 13.2	0.5	1.8	0.13	27	13 17.0	17 35 32.04	23 28 10.0	0.5	1.8	0.13
12	16 19.1	17 40 40.18	23 30 12.9	0.5	1.8	0.13	28	13 12.9	17 35 22.11	23 28 04.9	0.5	1.8	0.13
13	16 15.1	17 40 37.28	23 30 12.5	0.5	1.8	0.13	29	13 08.8	17 35 12.10	23 27 59.7	0.5	1.8	0.13
14	16 11.1	17 40 34.17	-23 30 12.0	0.5	1.8	0.13	30	13 04.7	17 35 02.02	-23 27 54.4	0.5	1.8	0.13
15	16 07.1	17 40 30.84	23 30 11.4	0.5	1.8	0.13	31	13 00.6	17 34 51.86	23 27 49.0	0.5	1.8	0.13
16	16 03.1	17 40 27.30	23 30 10.6	0.5	1.8	0.13	June 1	12 56.5	17 34 41.64	23 27 43.6	0.5	1.8	0.13
17	15 59.2	17 40 23.55	23 30 09.7	0.5	1.8	0.13	2	12 52.4	17 34 31.37	23 27 38.1	0.5	1.8	0.13
18	15 55.2	17 40 19.60	23 30 08.7	0.5	1.8	0.13	3	12 48.3	17 34 21.04	23 27 32.5	0.5	1.8	0.13
19	15 51.2	17 40 15.45	-23 30 07.7	0.5	1.8	0.13	4	12 44.2	17 34 10.66	-23 27 26.8	0.5	1.8	0.13
20	15 47.2	17 40 11.10	23 30 06.6	0.5	1.8	0.13	5	12 40.1	17 34 00.24	23 27 21.0	0.5	1.8	0.13
21	15 43.2	17 40 06.55	23 30 05.4	0.5	1.8	0.13	6	12 36.0	17 33 49.77	23 27 15.1	0.5	1.8	0.13
22	15 39.1	17 40 01.80	23 30 04.0	0.5	1.8	0.13	7	12 31.9	17 33 39.26	23 27 09.2	0.5	1.8	0.13
23	15 35.1	17 39 56.85	23 30 02.6	0.5	1.8	0.13	8	12 27.8	17 33 28.72	23 27 03.2	0.5	1.8	0.13
24	15 31.1	17 39 51.70	-23 30 01.1	0.5	1.8	0.13	9	12 23.7	17 33 18.16	-23 26 57.1	0.5	1.8	0.13
25	15 27.1	17 39 46.36	23 29 59.5	0.5	1.8	0.13	10	12 19.6	17 33 07.58	23 26 50.9	0.5	1.8	0.13
26	15 23.1	17 39 40.83	23 29 57.7	0.5	1.8	0.13	11	12 15.4	17 32 56.97	23 26 44.7	0.5	1.8	0.13
27	15 19.0	17 39 35.11	23 29 55.8	0.5	1.8	0.13	12	12 11.3	17 32 46.34	23 26 38.5	0.5	1.8	0.13
28	15 15.0	17 39 29.21	23 29 53.8	0.5	1.8	0.13	13	12 07.2	17 32 35.70	23 26 32.2	0.5	1.8	0.13
29	15 11.0	17 39 23.13	-23 29 51.7	0.5	1.8	0.13	14	12 03.1	17 32 25.05	-23 26 25.8	0.5	1.8	0.13
30	15 06.9	17 39 16.88	-23 29 49.5	0.5	1.8	0.13	15	11 59.0	17 32 14.39	-23 26 19.3	0.5	1.8	0.13

FOR TRANSIT AT WASHINGTON.

Date.	Mean Time of Transit.	Apparent Right Ascension.	Apparent Declination.	Hor. Par.	Semi- diam.	Sid. T. of S.D. Pass. Mer.	Date.	Mean Time of Transit.	Apparent Right Ascension.	Apparent Declination.	Hor. Par.	Semi- diam.	Sid. T. of S.D. Pass. Mer.
	h m	h m s	° ' "	"	"	s		h m	h m s	° ' "	"	"	s
June 15	11 59.0	17 32 14.39	23 26 19.3	0.5	1.8	0.13	July 31	8 51.2	17 25 13.14	23 21 23.8	0.5	1.8	0.13
16	11 54.9	17 32 03.73	23 26 12.8	0.5	1.8	0.13	Aug. 1	8 47.2	17 25 06.91	23 21 18.9	0.5	1.8	0.13
17	11 50.8	17 31 53.08	23 26 06.3	0.5	1.8	0.13	2	8 43.1	17 25 00.86	23 21 14.1	0.5	1.8	0.13
18	11 46.7	17 31 42.44	23 25 59.7	0.5	1.8	0.13	3	8 39.1	17 24 54.98	23 21 09.4	0.5	1.8	0.13
19	11 42.6	17 31 31.82	23 25 53.1	0.5	1.8	0.13	4	8 35.1	17 24 49.29	23 21 04.8	0.5	1.8	0.13
20	11 38.5	17 31 21.21	23 25 46.4	0.5	1.8	0.13	5	8 31.1	17 24 43.78	23 21 00.4	0.5	1.8	0.13
21	11 34.4	17 31 10.62	23 25 39.7	0.5	1.8	0.13	6	8 27.0	17 24 38.46	23 20 56.1	0.5	1.8	0.13
22	11 30.3	17 31 00.06	23 25 32.9	0.5	1.8	0.13	7	8 23.0	17 24 33.32	23 20 51.9	0.5	1.8	0.13
23	11 26.2	17 30 49.53	23 25 26.1	0.5	1.8	0.13	8	8 19.0	17 24 28.37	23 20 47.9	0.5	1.8	0.13
24	11 22.1	17 30 39.04	23 25 19.3	0.5	1.8	0.13	9	8 15.0	17 24 23.61	23 20 44.1	0.5	1.8	0.13
25	11 18.0	17 30 28.59	23 25 12.5	0.5	1.8	0.13	10	8 11.0	17 24 19.04	23 20 40.4	0.5	1.8	0.13
26	11 13.9	17 30 18.18	23 25 05.7	0.5	1.8	0.13	11	8 07.0	17 24 14.66	23 20 36.9	0.5	1.8	0.13
27	11 09.8	17 30 07.82	23 24 58.8	0.5	1.8	0.13	12	8 03.0	17 24 10.48	23 20 33.5	0.5	1.8	0.13
28	11 05.7	17 29 57.52	23 24 52.0	0.5	1.8	0.13	13	7 59.0	17 24 06.50	23 20 30.3	0.5	1.8	0.13
29	11 01.6	17 29 47.28	23 24 45.1	0.5	1.8	0.13	14	7 55.0	17 24 02.72	23 20 27.3	0.5	1.8	0.13
30	10 57.5	17 29 37.09	23 24 38.2	0.5	1.8	0.13	15	7 51.0	17 23 59.13	23 20 24.4	0.5	1.8	0.13
July 1	10 53.4	17 29 26.97	23 24 31.3	0.5	1.8	0.13	16	7 47.0	17 23 55.75	23 20 21.6	0.5	1.8	0.13
2	10 49.3	17 29 16.92	23 24 24.4	0.5	1.8	0.13	17	7 43.0	17 23 52.58	23 20 19.0	0.5	1.8	0.13
3	10 45.2	17 29 06.96	23 24 17.5	0.5	1.8	0.13	18	7 39.0	17 23 49.61	23 20 16.6	0.5	1.8	0.13
4	10 41.1	17 28 57.07	23 24 10.6	0.5	1.8	0.13	19	7 35.1	17 23 46.86	23 20 14.4	0.5	1.8	0.13
5	10 37.0	17 28 47.27	23 24 03.8	0.5	1.8	0.13	20	7 31.1	17 23 44.32	23 20 12.4	0.5	1.8	0.13
6	10 32.9	17 28 37.55	23 23 57.0	0.5	1.8	0.13	21	7 27.1	17 23 41.99	23 20 10.6	0.5	1.8	0.13
7	10 28.8	17 28 27.92	23 23 50.2	0.5	1.8	0.13	22	7 23.1	17 23 39.88	23 20 08.9	0.5	1.8	0.13
8	10 24.7	17 28 18.38	23 23 43.4	0.5	1.8	0.13	23	7 19.2	17 23 37.98	23 20 07.4	0.5	1.8	0.13
9	10 20.6	17 28 08.94	23 23 36.6	0.5	1.8	0.13	24	7 15.2	17 23 36.29	23 20 06.1	0.5	1.8	0.13
10	10 16.5	17 27 59.60	23 23 29.9	0.5	1.8	0.13	25	7 11.3	17 23 34.82	23 20 04.9	0.5	1.8	0.13
11	10 12.4	17 27 50.37	23 23 23.2	0.5	1.8	0.13	26	7 07.3	17 23 33.57	23 20 03.9	0.5	1.8	0.13
12	10 08.3	17 27 41.25	23 23 16.5	0.5	1.8	0.13	27	7 03.4	17 23 32.53	23 20 03.1	0.5	1.8	0.13
13	10 04.3	17 27 32.24	23 23 09.9	0.5	1.8	0.13	28	6 59.4	17 23 31.71	23 20 02.5	0.5	1.8	0.13
14	10 00.2	17 27 23.34	23 23 03.3	0.5	1.8	0.13	29	6 55.5	17 23 31.11	23 20 02.1	0.5	1.8	0.13
15	9 56.1	17 27 14.56	23 22 56.8	0.5	1.8	0.13	30	6 51.5	17 23 30.74	23 20 01.9	0.5	1.8	0.13
16	9 52.0	17 27 05.91	23 22 50.4	0.5	1.8	0.13	31	6 47.6	17 23 30.58	23 20 01.9	0.5	1.8	0.13
17	9 48.0	17 26 57.37	23 22 44.1	0.5	1.8	0.13	Sept. 1	6 43.7	17 23 30.64	23 20 02.1	0.5	1.8	0.13
18	9 43.9	17 26 48.96	23 22 37.8	0.5	1.8	0.13	2	6 39.7	17 23 30.93	23 20 02.5	0.5	1.8	0.13
19	9 39.8	17 26 40.69	23 22 31.6	0.5	1.8	0.13	3	6 35.8	17 23 31.44	23 20 03.0	0.5	1.8	0.13
20	9 35.8	17 26 32.56	23 22 25.5	0.5	1.8	0.13	4	6 31.9	17 23 32.18	23 20 03.7	0.5	1.8	0.13
21	9 31.7	17 26 24.58	23 22 19.4	0.5	1.8	0.13	5	6 28.0	17 23 33.13	23 20 04.6	0.5	1.8	0.13
22	9 27.6	17 26 16.73	23 22 13.3	0.5	1.8	0.13	6	6 24.1	17 23 34.30	23 20 05.7	0.5	1.8	0.13
23	9 23.6	17 26 09.03	23 22 07.3	0.5	1.8	0.13	7	6 20.2	17 23 35.68	23 20 07.1	0.5	1.8	0.13
24	9 19.5	17 26 01.48	23 22 01.5	0.5	1.8	0.13	8	6 16.3	17 23 37.30	23 20 08.6	0.5	1.8	0.13
25	9 15.5	17 25 54.09	23 21 55.8	0.5	1.8	0.13	9	6 12.4	17 23 39.14	23 20 10.3	0.5	1.8	0.13
26	9 11.4	17 25 46.87	23 21 50.2	0.5	1.8	0.13	10	6 08.5	17 23 41.20	23 20 12.2	0.5	1.8	0.13
27	9 07.4	17 25 39.81	23 21 44.7	0.5	1.8	0.13	11	6 04.6	17 23 43.48	23 20 14.2	0.5	1.7	0.13
28	9 03.3	17 25 32.90	23 21 39.3	0.5	1.8	0.13	12	6 00.7	17 23 45.99	23 20 16.5	0.5	1.7	0.13
29	8 59.3	17 25 26.14	23 21 34.0	0.5	1.8	0.13	13	5 56.8	17 23 48.72	23 20 19.0	0.5	1.7	0.13
30	8 55.2	17 25 19.55	23 21 28.8	0.5	1.8	0.13	14	5 52.9	17 23 51.67	23 20 21.6	0.5	1.7	0.13
31	8 51.2	17 25 13.14	23 21 23.8	0.5	1.8	0.13	15	5 49.0	17 23 54.83	23 20 24.4	0.5	1.7	0.13

FOR TRANSIT AT WASHINGTON.

Date.	Mean Time of Transit.	Apparent Right Ascension.	Apparent Declination.	Hor. Par.	Semi- diam.	Sid.T. of S.D. Pass. Mer.	Date.	Mean Time of Transit.	Apparent Right Ascension.	Apparent Declination.	Hor. Par.	Semi- diam.	Sid.T. of S.D. Pass. Mer.
	h m	h m s	° ' "	"	"	s		h m	h m s	° ' "	"	"	s
Jan. 0	11 30.5	6 09 08.04	+22 17 27.5	0.3	1.3	0.10	Feb. 14	8 29.2	6 04 44.13	+22 19 30.2	0.3	1.3	0.09
1	11 26.4	6 09 00.78	22 17 30.0	0.3	1.3	0.10	15	8 25.2	6 04 40.54	22 19 33.0	0.3	1.3	0.09
2	11 22.4	6 08 53.55	22 17 32.5	0.3	1.3	0.10	16	8 21.2	6 04 37.07	22 19 35.9	0.3	1.3	0.09
3	11 18.3	6 08 46.35	22 17 35.0	0.3	1.3	0.10	17	8 17.2	6 04 33.73	22 19 38.8	0.3	1.3	0.09
4	11 14.3	6 08 39.18	22 17 37.5	0.3	1.3	0.10	18	8 13.2	6 04 30.52	22 19 41.7	0.3	1.3	0.09
5	11 10.2	6 08 32.05	+22 17 40.0	0.3	1.3	0.10	19	8 09.2	6 04 27.44	+22 19 44.6	0.3	1.3	0.09
6	11 06.2	6 08 24.96	22 17 42.6	0.3	1.3	0.10	20	8 05.3	6 04 24.49	22 19 47.5	0.3	1.3	0.09
7	11 02.1	6 08 17.90	22 17 45.2	0.3	1.3	0.10	21	8 01.3	6 04 21.68	22 19 50.4	0.3	1.3	0.09
8	10 58.1	6 08 10.88	22 17 47.8	0.3	1.3	0.10	22	7 57.3	6 04 19.01	22 19 53.3	0.3	1.3	0.09
9	10 54.0	6 08 03.90	22 17 50.4	0.3	1.3	0.10	23	7 53.3	6 04 16.48	22 19 56.2	0.3	1.3	0.09
10	10 50.0	6 07 56.98	+22 17 53.0	0.3	1.3	0.10	24	7 49.4	6 04 14.08	+22 19 59.1	0.3	1.3	0.09
11	10 45.9	6 07 50.11	22 17 55.6	0.3	1.3	0.10	25	7 45.4	6 04 11.82	22 20 02.0	0.3	1.3	0.09
12	10 41.9	6 07 43.29	22 17 58.2	0.3	1.3	0.10	26	7 41.4	6 04 09.70	22 20 04.9	0.3	1.3	0.09
13	10 37.8	6 07 36.52	22 18 00.8	0.3	1.3	0.10	27	7 37.5	6 04 07.71	22 20 07.7	0.3	1.3	0.09
14	10 33.8	6 07 29.81	22 18 03.5	0.3	1.3	0.10	28	7 33.5	6 04 05.87	22 20 10.6	0.3	1.3	0.09
15	10 29.8	6 07 23.15	+22 18 06.2	0.3	1.3	0.10	Mar. 1	7 29.5	6 04 04.18	+22 20 13.5	0.3	1.3	0.09
16	10 25.7	6 07 16.56	22 18 08.9	0.3	1.3	0.10	2	7 25.6	6 04 02.62	22 20 16.3	0.3	1.3	0.09
17	10 21.7	6 07 10.04	22 18 11.6	0.3	1.3	0.10	3	7 21.6	6 04 01.20	22 20 19.1	0.3	1.3	0.09
18	10 17.6	6 07 03.59	22 18 14.3	0.3	1.3	0.10	4	7 17.7	6 03 59.93	22 20 22.0	0.3	1.3	0.09
19	10 13.6	6 06 57.20	22 18 17.0	0.3	1.3	0.10	5	7 13.8	6 03 58.80	22 20 24.9	0.3	1.3	0.09
20	10 09.6	6 06 50.89	+22 18 19.7	0.3	1.3	0.10	6	7 09.9	6 03 57.82	+22 20 27.7	0.3	1.3	0.09
21	10 05.5	6 06 44.66	22 18 22.4	0.3	1.3	0.10	7	7 05.8	6 03 56.99	22 20 30.5	0.3	1.3	0.09
22	10 01.5	6 06 38.52	22 18 25.1	0.3	1.3	0.10	8	7 01.9	6 03 56.31	22 20 33.3	0.3	1.3	0.09
23	9 57.5	6 06 32.45	22 18 27.9	0.3	1.3	0.10	9	6 57.9	6 03 55.77	22 20 36.1	0.3	1.3	0.09
24	9 53.4	6 06 26.47	22 18 30.7	0.3	1.3	0.10	10	6 54.0	6 03 55.38	22 20 38.9	0.3	1.3	0.09
25	9 49.4	6 06 20.57	+22 18 33.5	0.3	1.3	0.10	11	6 50.1	6 03 55.14	+22 20 41.7	0.3	1.3	0.09
26	9 45.4	6 06 14.75	22 18 36.3	0.3	1.3	0.10	12	6 46.1	6 03 55.04	22 20 44.5	0.3	1.3	0.09
27	9 41.4	6 06 09.03	22 18 39.1	0.3	1.3	0.10	13	6 42.2	6 03 55.09	22 20 47.3	0.3	1.3	0.09
28	9 37.3	6 06 03.40	22 18 41.9	0.3	1.3	0.10	14	6 38.3	6 03 55.28	22 20 50.1	0.3	1.3	0.09
29	9 33.3	6 05 57.87	22 18 44.7	0.3	1.3	0.10	15	6 34.3	6 03 55.62	22 20 52.8	0.3	1.3	0.09
30	9 29.3	6 05 52.44	+22 18 47.5	0.3	1.3	0.10	16	6 30.4	6 03 56.10	+22 20 55.6	0.3	1.3	0.09
31	9 25.3	6 05 47.10	22 18 50.2	0.3	1.3	0.10	17	6 26.5	6 03 56.73	22 20 58.4	0.3	1.3	0.09
Feb. 1	9 21.2	6 05 41.87	22 18 53.0	0.3	1.3	0.10	18	6 22.6	6 03 57.51	22 21 01.1	0.3	1.3	0.09
2	9 17.2	6 05 36.75	22 18 55.8	0.3	1.3	0.10	19	6 18.7	6 03 58.43	22 21 03.8	0.3	1.3	0.09
3	9 13.2	6 05 31.74	22 18 58.7	0.3	1.3	0.10	20	6 14.7	6 03 59.50	22 21 06.5	0.3	1.3	0.09
4	9 09.2	6 05 26.83	+22 19 01.5	0.3	1.3	0.10	21	6 10.8	6 04 00.72	+22 21 09.2	0.3	1.3	0.09
5	9 05.2	6 05 22.04	22 19 04.3	0.3	1.3	0.09	22	6 06.9	6 04 02.08	22 21 11.8	0.3	1.3	0.09
6	9 01.2	6 05 17.36	22 19 07.2	0.3	1.3	0.09	23	6 03.0	6 04 03.59	22 21 14.4	0.3	1.3	0.09
7	8 57.2	6 05 12.79	22 19 10.1	0.3	1.3	0.09	24	5 59.1	6 04 05.25	22 21 17.0	0.3	1.3	0.09
8	8 53.2	6 05 08.33	22 19 12.9	0.3	1.3	0.09	25	5 55.2	6 04 07.06	22 21 19.6	0.3	1.3	0.09
9	8 49.2	6 05 03.99	+22 19 15.8	0.3	1.3	0.09	Sept. 25	18 09.2	6 25 30.20	+22 15 22.7	0.3	1.3	0.09
10	8 45.2	6 04 59.77	22 19 18.7	0.3	1.3	0.09	26	18 05.3	6 25 32.12	22 15 19.9	0.3	1.3	0.09
11	8 41.2	6 04 55.68	22 19 21.6	0.3	1.3	0.09	27	18 01.4	6 25 33.89	22 15 17.2	0.3	1.3	0.09
12	8 37.2	6 04 51.70	22 19 24.4	0.3	1.3	0.09	28	17 57.5	6 25 35.52	22 15 14.5	0.3	1.3	0.09
13	8 33.2	6 04 47.85	22 19 27.3	0.3	1.3	0.09	29	17 53.6	6 25 37.00	22 15 11.9	0.3	1.3	0.09
14	8 29.2	6 04 44.13	+22 19 30.2	0.3	1.3	0.09	30	17 49.6	6 25 38.34	+22 15 09.5	0.3	1.3	0.09
15	8 25.2	6 04 40.54	+22 19 33.0	0.3	1.3	0.09	Oct. 1	17 45.7	6 25 39.54	+22 15 07.1	0.3	1.3	0.09

FOR TRANSIT AT WASHINGTON.

Date.	Mean Time of Transit.	Apparent Right Ascension.	Apparent Declination.	Hor. Par.	Semi- diam.	Sid.T. of S.D. Pass. Mer.	Date.	Mean Time of Transit.	Apparent Right Ascension.	Apparent Declination.	Hor. Par.	Semi- diam.	Sid.T. of S.D. Pass. Mer.
	h m	h m s	° ' "	"	"	s		h m	h m s	° ' "	"	"	s
Oct. 1	17 45.7	6 25 39.54	+22 15 07.1	0.3	1.3	0.09	Nov. 16	14 43.3	6 24 02.88	+22 14 58.6	0.3	1.3	0.09
2	17 41.8	6 25 40.59	22 15 04.8	0.3	1.3	0.09	17	14 39.2	6 23 57.79	22 15 00.6	0.3	1.3	0.10
3	17 37.9	6 25 41.49	22 15 02.5	0.3	1.3	0.09	18	14 35.2	6 23 52.60	22 15 02.7	0.3	1.3	0.10
4	17 34.0	6 25 42.26	22 15 00.4	0.3	1.3	0.09	19	14 31.2	6 23 47.31	22 15 04.8	0.3	1.3	0.10
5	17 30.1	6 25 42.88	22 14 58.4	0.3	1.3	0.09	20	14 27.2	6 23 41.92	22 15 07.0	0.3	1.3	0.10
6	17 26.1	6 25 43.36	+22 14 56.4	0.3	1.3	0.09	21	14 23.2	6 23 36.43	+22 15 09.3	0.3	1.3	0.10
7	17 22.2	6 25 43.68	22 14 54.5	0.3	1.3	0.09	22	14 19.1	6 23 30.83	22 15 11.6	0.3	1.3	0.10
8	17 18.3	6 25 43.87	22 14 52.8	0.3	1.3	0.09	23	14 15.1	6 23 25.14	22 15 14.0	0.3	1.3	0.10
9	17 14.4	6 25 43.91	22 14 51.1	0.3	1.3	0.09	24	14 11.1	6 23 19.36	22 15 16.5	0.3	1.3	0.10
10	17 10.3	6 25 43.81	22 14 49.5	0.3	1.3	0.09	25	14 07.0	6 23 13.49	22 15 19.1	0.3	1.3	0.10
11	17 06.5	6 25 43.56	+22 14 48.0	0.3	1.3	0.09	26	14 03.0	6 23 07.53	+22 15 21.8	0.3	1.3	0.10
12	17 02.6	6 25 43.16	22 14 46.7	0.3	1.3	0.09	27	13 59.0	6 23 01.50	22 15 24.5	0.3	1.3	0.10
13	16 58.6	6 25 42.62	22 14 45.4	0.3	1.3	0.09	28	13 54.9	6 22 55.39	22 15 27.3	0.3	1.3	0.10
14	16 54.7	6 25 41.93	22 14 44.3	0.3	1.3	0.09	29	13 50.9	6 22 49.19	22 15 30.1	0.3	1.3	0.10
15	16 50.7	6 25 41.11	22 14 43.2	0.3	1.3	0.09	30	13 46.9	6 22 42.91	22 15 33.0	0.3	1.3	0.10
16	16 46.8	6 25 40.14	+22 14 42.2	0.3	1.3	0.09	Dec. 1	13 42.8	6 22 36.55	+22 15 36.0	0.3	1.3	0.10
17	16 42.8	6 25 39.03	22 14 41.2	0.3	1.3	0.09	2	13 38.8	6 22 30.13	22 15 39.0	0.3	1.3	0.10
18	16 38.9	6 25 37.77	22 14 40.3	0.3	1.3	0.09	3	13 34.7	6 22 23.64	22 15 42.1	0.3	1.3	0.10
19	16 34.9	6 25 36.37	22 14 39.6	0.3	1.3	0.09	4	13 30.7	6 22 17.08	22 15 45.3	0.3	1.3	0.10
20	16 30.9	6 25 34.82	22 14 39.0	0.3	1.3	0.09	5	13 26.7	6 22 10.47	22 15 48.5	0.3	1.3	0.10
21	16 27.0	6 25 33.13	+22 14 38.5	0.3	1.3	0.09	6	13 22.6	6 22 03.79	+22 15 51.8	0.3	1.3	0.10
22	16 23.0	6 25 31.30	22 14 38.1	0.3	1.3	0.09	7	13 18.6	6 21 57.05	22 15 55.1	0.3	1.3	0.10
23	16 19.1	6 25 29.33	22 14 37.8	0.3	1.3	0.09	8	13 14.5	6 21 50.25	22 15 58.4	0.3	1.3	0.10
24	16 15.1	6 25 27.22	22 14 37.6	0.3	1.3	0.09	9	13 10.5	6 21 43.40	22 16 01.8	0.3	1.3	0.10
25	16 11.1	6 25 24.98	22 14 37.5	0.3	1.3	0.09	10	13 06.4	6 21 36.50	22 16 05.3	0.3	1.3	0.10
26	16 07.2	6 25 22.59	+22 14 37.5	0.3	1.3	0.09	11	13 02.4	6 21 29.55	+22 16 08.8	0.3	1.3	0.10
27	16 03.2	6 25 20.07	22 14 37.6	0.3	1.3	0.09	12	12 58.3	6 21 22.56	22 16 12.4	0.3	1.3	0.10
28	15 59.2	6 25 17.41	22 14 37.7	0.3	1.3	0.09	13	12 54.3	6 21 15.52	22 16 16.0	0.3	1.3	0.10
29	15 55.2	6 25 14.62	22 14 37.9	0.3	1.3	0.09	14	12 50.2	6 21 08.44	22 16 19.6	0.3	1.3	0.10
30	15 51.2	6 25 11.69	22 14 38.2	0.3	1.3	0.09	15	12 46.2	6 21 01.32	22 16 23.3	0.3	1.3	0.10
31	15 47.3	6 25 08.63	+22 14 38.6	0.3	1.3	0.09	16	12 42.1	6 20 54.16	+22 16 27.0	0.3	1.3	0.10
Nov. 1	15 43.3	6 25 05.45	22 14 39.2	0.3	1.3	0.09	17	12 38.1	6 20 46.97	22 16 30.8	0.3	1.3	0.10
2	15 39.3	6 25 02.14	22 14 40.0	0.3	1.3	0.09	18	12 34.0	6 20 39.76	22 16 34.6	0.3	1.3	0.10
3	15 35.3	6 24 58.69	22 14 40.8	0.3	1.3	0.09	19	12 30.0	6 20 32.52	22 16 38.4	0.3	1.3	0.10
4	15 31.3	6 24 55.12	22 14 41.6	0.3	1.3	0.09	20	12 25.9	6 20 25.25	22 16 42.3	0.3	1.3	0.10
5	15 27.3	6 24 51.43	+22 14 42.5	0.3	1.3	0.09	21	12 21.9	6 20 17.97	+22 16 46.2	0.3	1.3	0.10
6	15 23.3	6 24 47.61	22 14 43.5	0.3	1.3	0.09	22	12 17.8	6 20 10.67	22 16 50.1	0.3	1.3	0.10
7	15 19.3	6 24 43.67	22 14 44.6	0.3	1.3	0.09	23	12 13.8	6 20 03.36	22 16 54.0	0.3	1.3	0.10
8	15 15.3	6 24 39.61	22 14 45.8	0.3	1.3	0.09	24	12 09.7	6 19 56.04	22 16 58.0	0.3	1.3	0.10
9	15 11.3	6 24 35.43	22 14 47.1	0.3	1.3	0.09	25	12 05.7	6 19 48.71	22 17 02.0	0.3	1.3	0.10
10	15 07.3	6 24 31.12	+22 14 48.5	0.3	1.3	0.09	26	12 01.6	6 19 41.38	+22 17 06.0	0.3	1.3	0.10
11	15 03.3	6 24 26.69	22 14 50.0	0.3	1.3	0.09	27	11 57.6	6 19 34.05	22 17 10.0	0.3	1.3	0.10
12	14 59.3	6 24 22.15	22 14 51.6	0.3	1.3	0.09	28	11 53.5	6 19 26.73	22 17 14.1	0.3	1.3	0.10
13	14 55.3	6 24 17.50	22 14 53.2	0.3	1.3	0.09	29	11 49.5	6 19 19.41	22 17 18.2	0.3	1.3	0.10
14	14 51.3	6 24 12.74	22 14 54.9	0.3	1.3	0.09	30	11 45.4	6 19 12.10	22 17 22.3	0.3	1.3	0.10
15	14 47.3	6 24 07.86	+22 14 56.7	0.3	1.3	0.09	31	11 41.3	6 19 04.80	+22 17 26.4	0.3	1.3	0.10
16	14 43.3	6 24 02.88	+22 14 58.6	0.3	1.3	0.09	32	11 37.3	6 18 57.52	+22 17 30.5	0.3	1.3	0.10

PART III

P H E N O M E N A

ECLIPSES IN 1903.

In the year 1903 there will be four eclipses, two of the Sun and two of the Moon.

I.—*An Annular Eclipse of the Sun*, 1903, March 28; invisible at Washington.

ELEMENTS OF THE ECLIPSE.

Greenwich mean time of δ in right ascension, March 28				^d 14	^h 05	^m 16.5	
Sun and Moon's R. A.	^h 0	^m 26	^s 30.56	Hourly motions		^s 9.09 and 125.60	
Sun's declination	2	51	57.2 N.	Hourly motion		0	58.6 N.
Moon's declination	3	42	03.7 N.	Hourly motion		10	13.3 N.
Sun's equa. hor. parallax	8.8			Sun's true semidiameter		16	01.0
Moon's equa. hor. parallax	56	56.8		Moon's true semidiameter		15	31.1

CIRCUMSTANCES OF THE ECLIPSE.

	Greenwich Mean Time.	Longitude from Greenwich.	Latitude.
Eclipse begins	March ^d 28 ^h 11 ^m 09.2	103 16.2 E.	15 10.8 N.
Central eclipse begins	28 12 35.2	80 08.1 E.	39 52.3 N.
Central eclipse at noon	28 14 05.3	150 00.1 E.	65 13.4 N.
Central eclipse ends	28 14 35.3	116 45.6 W.	74 56.4 N.
Eclipse ends	28 16 01.4	145 31.1 W.	50 28.6 N.

II.—*A Partial Eclipse of the Moon*, 1903, April 11, partly visible at Washington; the beginning visible generally in Europe, Africa, the western portions of Asia, and the eastern portions of South America; the ending visible generally throughout Europe, Africa, South America, and the eastern portions of North America.

ELEMENTS OF THE ECLIPSE.

ELEMENTS OF THE ECLIPSE.									
Greenwich mean time of δ in right ascension, April 11 11 57 24.7									
Sun's right ascension	h	m	s	16.62	Hourly motion		s	9.18	
Moon's right ascension	13	17	16.62		Hourly motion		129.38		
Sun's declination	°	'	"	8 09 58.9 N.	Hourly motion		0 55.2	N.	
Moon's declination	7	41	17.4	S.	Hourly motion		9 40.3	S.	
Sun's equa. hor. parallax			8.8		Sun's true semidiameter	15	57.3		
Moon's equa. hor. parallax	57	24.2			Moon's true semidiameter	15	38.5		

CIRCUMSTANCES OF THE ECLIPSE.

Moon enters penumbra	April	^d 11 ^h 09 ^m 26.3	} Greenwich Mean Time.
Moon enters shadow		11 10 34.5	
Middle of the eclipse		11 12 13.0	
Moon leaves shadow		11 13 51.6	
Moon leaves penumbra		11 14 59.8	
Contacts of shadow with Moon's limb.	Angles of position from the north point.	The Moon being in the zenith in longitude from Greenwich, and in latitude	
First	135 to E.	20 59 E.	7 28 S.
Last	102 to W.	26 38 W.	7 59 S.

Magnitude of the eclipse = 0.973 (Moon's diameter = 1.0).

III.—*A Total Eclipse of the Sun, 1903, September 20, invisible at Washington.*

ELEMENTS OF THE ECLIPSE.

				d	h	m	s
Greenwich mean time of δ in right ascension, September 20				17	10	25.2	
Sun and Moon's R. A.	h	m	s	11	49	08.20	Hourly motions 8.98 and 138.22
Sun's declination	°	'	"	1	10	39.0	N. Hourly motion 0 58.3 S.
Moon's declination	°	'	"	0	14	21.0	N. Hourly motion 11 22.2 S.
Sun's equa. hor. parallax				8.8			Sun's true semidiameter 15 55.9
Moon's equa. hor. parallax				59	52.7		Moon's true semidiameter 16 19.0

CIRCUMSTANCES OF THE ECLIPSE.

		Greenwich Mean Time.	Longitude from Greenwich.	Latitude.
		d h m	°	'
Eclipse begins	September 20	14 27.8	51 49.6 E.	17 52.3 S.
Central eclipse begins		20 15 53.7	31 13.4 E.	46 17.2 S.
Central eclipse at noon		20 17 10.4	100 46.4 E.	69 55.2 S.
Central eclipse ends		20 17 25.7	178 32.3 E.	82 00.3 S.
Eclipse ends		20 18 51.8	163 51.5 E.	53 43.1 S.

IV.—*A Partial Eclipse of the Moon, 1903, October 6, invisible at Washington; the beginning visible generally in Africa and the Pacific Ocean; the ending visible generally throughout Africa, the eastern portions of Europe and Africa, and the Pacific Ocean.*

ELEMENTS OF THE ECLIPSE.

Greenwich mean time of δ in right ascension, October 6				d	h	m	s
				02	58	46.7	
Sun's right ascension	h	m	s	12	44	46.85	Hourly motion 9.11
Moon's right ascension	°	'	"	0	44	46.85	Hourly motion 121.97
Sun's declination	°	'	"	4	48	49.5	S. Hourly motion 0 57.7 S.
Moon's declination	°	'	"	4	17	47.9	N. Hourly motion 9 42.8 N.
Sun's equa. hor. parallax				8.8			Sun's true semidiameter 16 00.1
Moon's equa. hor. parallax				56	02.1		Moon's true semidiameter 15 16.2

CIRCUMSTANCES OF THE ECLIPSE.

		d	h	m	} Greenwich Mean Time.
Moon enters penumbra	October	6	00	27.1	
Moon enters shadow		6	01	40.3	
Middle of the eclipse		6	03	17.4	
Moon leaves shadow		6	04	54.5	
Moon leaves penumbra		6	06	07.8	

Contacts of shadow with Moon's limb.

Angles of position from the north point.

The Moon being in the zenith in longitude from Greenwich,

and in latitude.

First	41	to E.	151	26	E.	4	05	N.
Last	75	to W.	104	22	E.	4	37	N.

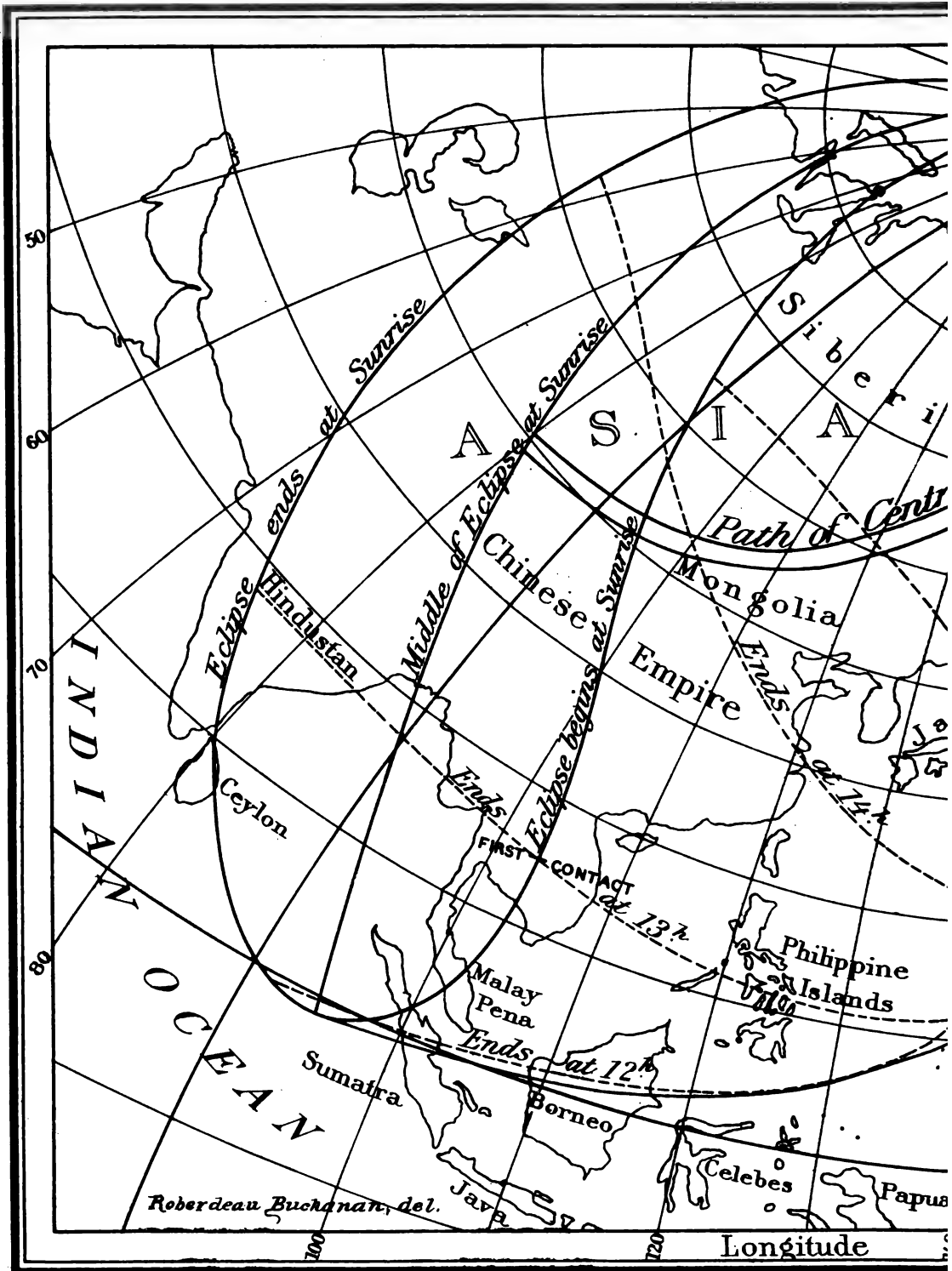
Magnitude of the eclipse = 0.868 (Moon's diameter = 1.0).

The regions within which the eclipses of the Sun are visible are laid down on the accompanying charts, from which, by means of the dotted lines, the Greenwich times of beginning and ending at any place may be found with an uncertainty which will vary from three or four minutes for a high Sun, to fifteen or twenty minutes where the Sun is near the horizon.

**BESSELIAN ELEMENTS OF THE ANNULAR ECLIPSE
OF THE SUN, 1903, MARCH 28.**

Greenwich Mean Time.	Co-ordinates of Center of Shadow on Fundamental Plane.		Direction of Axis of Shadow.			Radius of Penumbra and Shadow on Fundamental Plane.	
	<i>x</i>	<i>y</i>	Log sin <i>d</i>	Log cos <i>d</i>	μ	<i>l</i> ₁	<i>l</i> ₂
h m					°		
11 00	−1.579 89	+0.380 42	+8.691 13	+9.999 48	163 39.9	+0.555 51	+0.009 07
10	1.494 64	0.407 52	8.691 54	9.999 48	166 09.9	0.555 50	0.009 06
20	1.409 39	0.434 62	8.691 95	9.999 47	168 40.0	0.555 48	0.009 05
30	1.324 14	0.461 72	8.692 35	9.999 47	171 10.0	0.555 47	0.009 04
40	1.238 88	0.488 81	8.692 76	9.999 47	173 40.1	0.555 45	0.009 03
50	1.153 62	0.515 90	8.693 17	9.999 47	176 10.1	0.555 44	0.009 02
12 00	−1.068 36	+0.542 99	+8.693 57	+9.999 47	178 40.2	+0.555 42	+0.009 00
10	0.983 09	0.570 08	8.693 98	9.999 47	181 10.2	0.555 41	0.008 99
20	0.897 82	0.597 17	8.694 38	9.999 47	183 40.2	0.555 39	0.008 97
30	0.812 54	0.624 26	8.694 79	9.999 47	186 10.3	0.555 37	0.008 95
40	0.727 26	0.651 35	8.695 19	9.999 46	188 40.3	0.555 36	0.008 94
50	0.641 98	0.678 43	8.695 60	9.999 46	191 10.4	0.555 34	0.008 92
13 00	−0.556 69	+0.705 51	+8.696 00	+9.999 46	193 40.4	+0.555 32	+0.008 90
10	0.471 41	0.732 58	8.696 40	9.999 46	196 10.5	0.555 31	0.008 88
20	0.386 13	0.759 65	8.696 80	9.999 46	198 40.5	0.555 29	0.008 86
30	0.300 85	0.786 72	8.697 21	9.999 46	201 10.6	0.555 27	0.008 84
40	0.215 57	0.813 79	8.697 61	9.999 46	203 40.6	0.555 25	0.008 82
50	0.130 28	0.840 86	8.698 01	9.999 46	206 10.7	0.555 23	0.008 80
14 00	−0.044 99	+0.867 93	+8.698 41	+9.999 46	208 40.7	+0.555 21	+0.008 78
10	+0.040 30	0.894 99	8.698 81	9.999 46	211 10.8	0.555 19	0.008 76
20	0.125 59	0.922 05	8.699 21	9.999 45	213 40.8	0.555 16	0.008 74
30	0.210 89	0.949 10	8.699 62	9.999 45	216 10.8	0.555 14	0.008 72
40	0.296 19	0.976 15	8.700 02	9.999 45	218 40.9	0.555 11	0.008 69
50	0.381 49	1.003 20	8.700 42	9.999 45	221 10.9	0.555 09	0.008 67
15 00	+0.466 79	+1.030 25	+8.700 82	+9.999 45	223 41.0	+0.555 06	+0.008 64
10	0.552 09	1.057 29	8.701 22	9.999 45	226 11.0	0.555 04	0.008 62
20	0.637 39	1.084 33	8.701 62	9.999 45	228 41.1	0.555 01	0.008 59
30	0.722 69	1.111 36	8.702 02	9.999 45	231 11.1	0.554 98	0.008 56
40	0.807 99	1.138 39	8.702 41	9.999 45	233 41.1	0.554 96	0.008 53
50	0.893 29	1.165 42	8.702 81	9.999 45	236 11.2	0.554 93	0.008 50
16 00	+0.978 60	+1.192 44	+8.703 21	+9.999 45	238 41.2	+0.554 90	+0.008 47
Greenwich Mean Time.	Log <i>x'</i>	Log <i>y'</i>	Log μ'	Log Tangents of Angles of Cones.			
				Penumbra.	Shadow.		
h m							
11 00	+ 7.9307	+ 7.4331	+ 1.1762	+7.670 54	+7.668 37		
12 00	7.9308	7.4329	1.1762	7.670 53	7.668 37		
13 00	7.9309	7.4326	1.1762	7.670 53	7.668 36		
14 00	7.9310	7.4323	1.1762	7.670 52	7.668 35		
15 00	7.9310	7.4320	1.1762	7.670 52	7.668 35		
16 00	+ 7.9310	+ 7.4318	+ 1.1762	+7.670 51	+7.668 34		

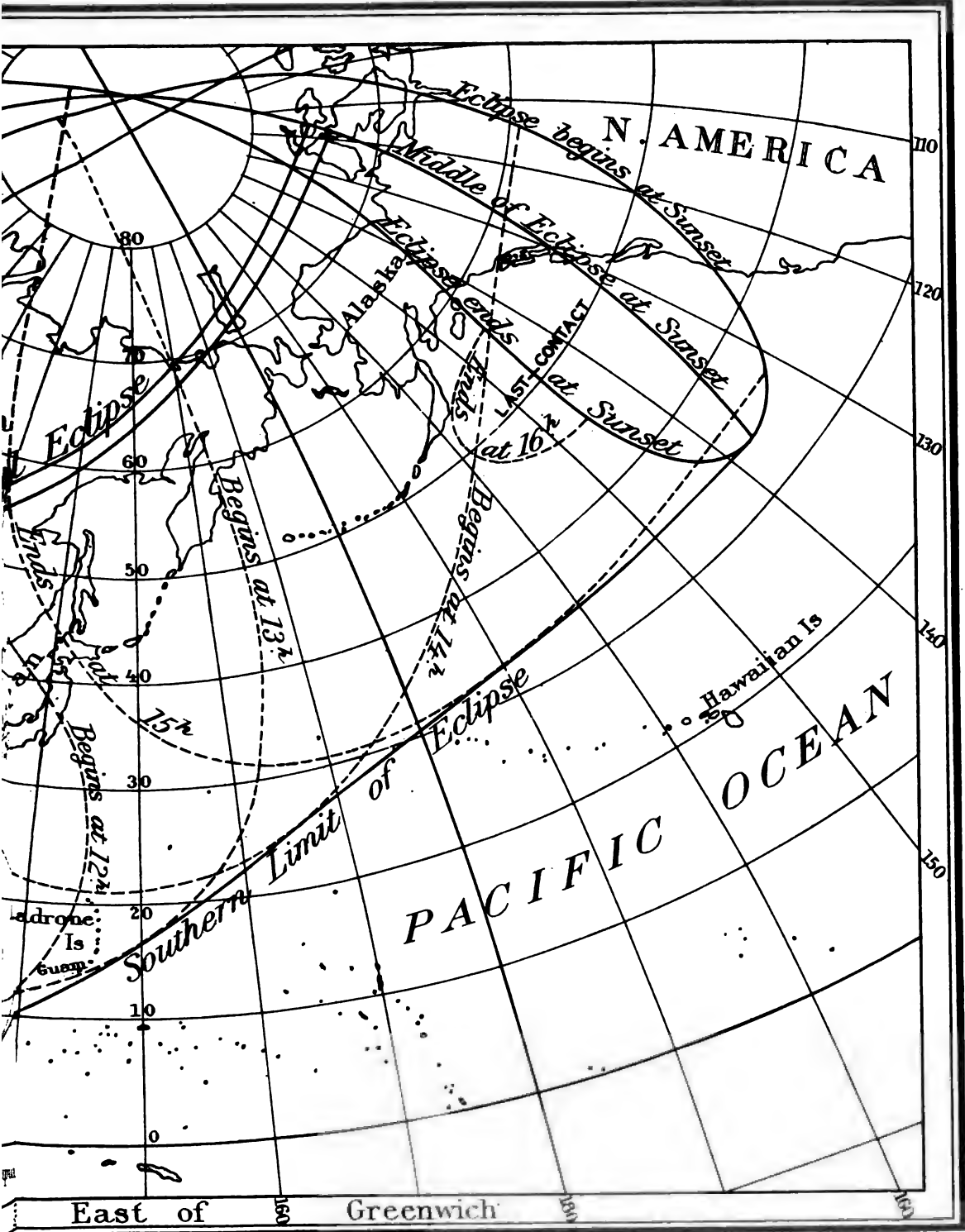
ANNULAR ECLIPSE



THE HORRIS PETERS CO. PHOTO-LITHO. WASHINGTON D. C.

Note: The hours of beginning and ending

OF MARCH 28TH, 1903.



are expressed in Greenwich Mean Time.

**BESSELIAN ELEMENTS OF THE TOTAL ECLIPSE
OF THE SUN, 1903, SEPTEMBER 20.**

Greenwich Mean Time.	Co-ordinates of Center of Shadow on Fundamental Plane.		Direction of Axis of Shadow.			Radius of Penumbra and Shadow on Fundamental Plane.	
	x	y	Log sin d	Log cos d	μ	l_1	l_2
h m							
14 20	-1.536 41	-0.446 83	+8.329 84	+9.999 90	216 36.4	+0.539 54	-0.006 81
30	1.446 27	0.475 94	8.328 91	9.999 90	219 06.5	0.539 56	0.006 79
40	1.356 13	0.505 04	8.327 98	9.999 90	221 36.5	0.539 59	0.006 76
50	1.265 99	0.534 14	8.327 04	9.999 90	224 06.6	0.539 61	0.006 74
15 00	-1.175 84	-0.563 24	+8.326 10	+9.999 90	226 36.6	+0.539 63	-0.006 72
10	1.085 69	0.592 34	8.325 16	9.999 90	229 06.7	0.539 66	0.006 69
20	0.995 54	0.621 43	8.324 22	9.999 90	231 36.7	0.539 68	0.006 67
30	0.905 38	0.650 52	8.323 27	9.999 90	234 06.8	0.539 70	0.006 65
40	0.815 22	0.679 61	8.322 32	9.999 90	236 36.8	0.539 72	0.006 63
50	0.725 06	0.708 70	8.321 37	9.999 90	239 06.9	0.539 74	0.006 61
16 00	-0.634 90	-0.737 79	+8.320 42	+9.999 90	241 36.9	+0.539 76	-0.006 59
10	0.544 74	0.766 87	8.319 46	9.999 90	244 07.0	0.539 78	0.006 57
20	0.454 58	0.795 95	8.318 50	9.999 90	246 37.0	0.539 80	0.006 55
30	0.364 42	0.825 03	8.317 54	9.999 91	249 07.1	0.539 81	0.006 53
40	0.274 26	0.854 11	8.316 58	9.999 91	251 37.1	0.539 83	0.006 52
50	0.184 10	0.883 19	8.315 62	9.999 91	254 07.2	0.539 85	0.006 50
17 00	-0.093 94	-0.912 27	+8.314 66	+9.999 91	256 37.2	+0.539 86	-0.006 49
10	-0.003 78	0.941 34	8.313 69	9.999 91	259 07.3	0.539 88	0.006 47
20	+0.086 38	0.970 41	8.312 72	9.999 91	261 37.3	0.539 89	0.006 46
30	0.176 54	0.999 47	8.311 75	9.999 91	264 07.4	0.539 90	0.006 44
40	0.266 70	1.028 53	8.310 78	9.999 91	266 37.4	0.539 91	0.006 43
50	0.356 86	1.057 59	8.309 81	9.999 91	269 07.5	0.539 92	0.006 42
18 00	+0.447 01	-1.086 64	+8.308 83	+9.999 91	271 37.5	+0.539 93	-0.006 41
10	0.537 16	1.115 69	8.307 85	9.999 91	274 07.6	0.539 94	0.006 41
20	0.627 31	1.144 74	8.306 87	9.999 91	276 37.6	0.539 95	0.006 40
30	0.717 46	1.173 79	8.305 89	9.999 91	279 07.7	0.539 96	0.006 39
40	0.807 61	1.202 84	8.304 90	9.999 91	281 37.7	0.539 97	0.006 38
50	0.897 76	1.231 89	8.303 91	9.999 91	284 07.8	0.539 98	0.006 37
19 00	+0.987 90	-1.260 93	+8.302 92	+9.999 91	286 37.8	+0.539 99	-0.006 36

Greenwich Mean Time.	Log x'	Log y'	Log μ'	Log Tangents of Angles of Cones.	
				Penumbra.	Shadow.
h m					
14 00	+7.9549	-7.4641	+1.1762	+7.668 12	+7.665 95
15 00	7.9550	7.4639	1.1762	7.668 12	7.665 95
16 00	7.9550	7.4637	1.1762	7.668 13	7.665 96
17 00	7.9550	7.4635	1.1762	7.668 13	7.665 96
18 00	7.9550	7.4632	1.1762	7.668 14	7.665 97
19 00	+7.9549	-7.4630	+1.1762	+7.668 14	+7.665 97

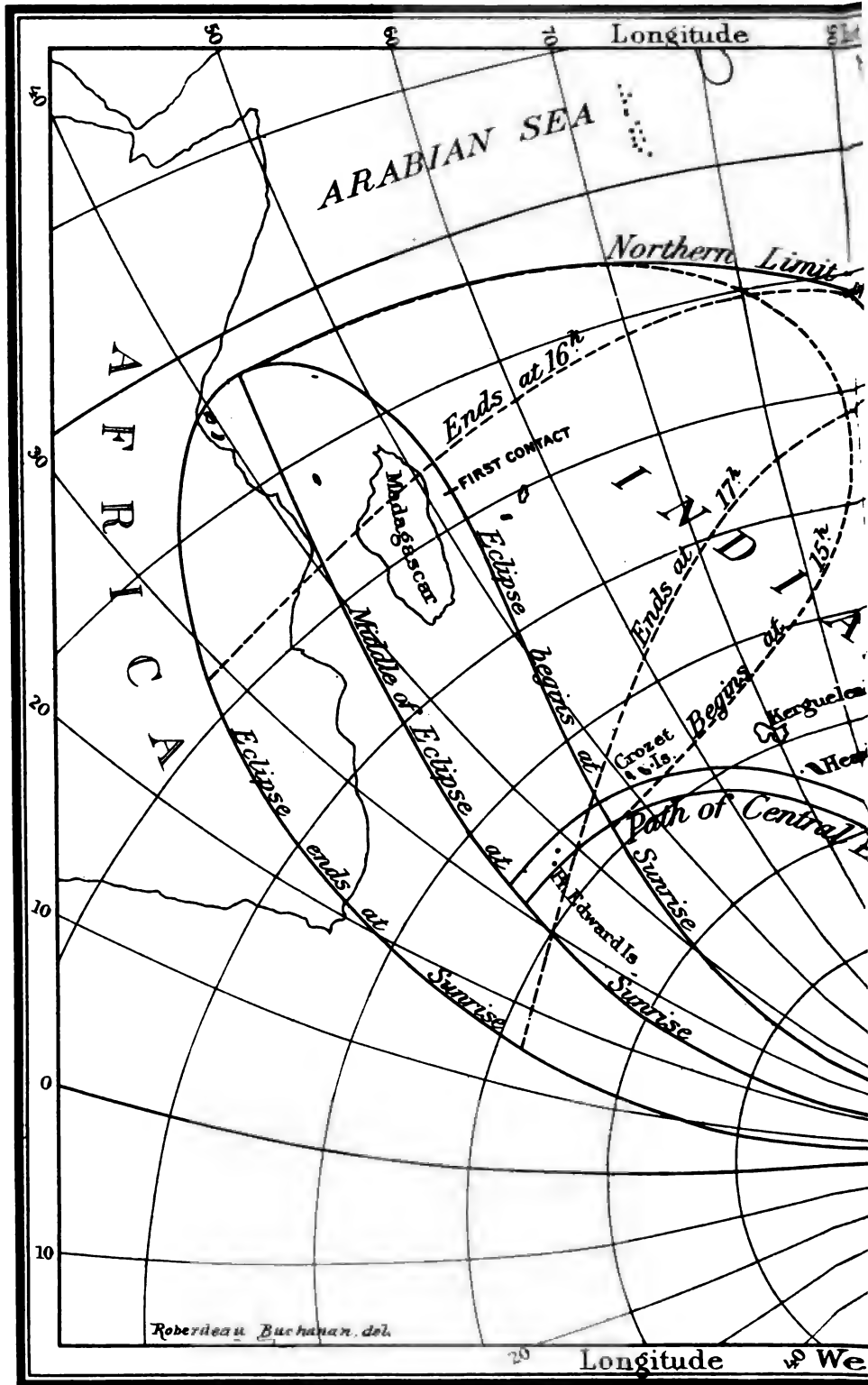
**PATH OF THE ANNULUS DURING THE ANNULAR ECLIPSE
OF THE SUN, 1903, MARCH 28.**

Greenwich Mean Time.	Northern Limit of Annulus or Totality.		Central Line.		Southern Limit of Annulus or Totality.		Duration of Annulus or Totality on Central Line.
	Latitude.	Longitude from Greenwich.	Latitude.	Longitude from Greenwich.	Latitude.	Longitude from Greenwich.	
Limits.	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	m s
12 ^h 40 ^m	+ 40 42.2	79 44.6 E.	+ 39 52.3	80 08.1 E.	+ 38 48.8	80 40.6 E.	
45	42 05.5	92 26.3	41 38.5	94 59.0	41 11.5	97 31.7	1 56.7
50	43 28.7	99 08.2	43 00.8	100 52.4	42 32.9	102 36.6	1 54.5
55	44 47.3	103 48.3	44 19.2	105 12.6	43 51.1	106 36.9	1 53.6
13 0	46 04.4	107 35.6	45 36.1	108 47.8	45 07.8	110 00.0	1 52.8
5	+ 47 20.8	110 51.7	+ 46 52.4	111 56.8	+ 46 24.0	113 01.9	1 52.2
10	48 37.5	113 49.3	48 08.8	114 48.8	47 40.1	115 48.3	1 51.6
15	49 54.5	116 34.5	49 25.5	117 29.7	48 56.5	118 24.9	1 51.1
20	51 12.3	119 11.6	50 42.9	120 03.4	50 13.5	120 55.2	1 50.6
25	52 31.2	121 44.4	52 01.2	122 33.5	51 31.2	123 22.6	1 50.2
30	53 51.3	124 15.6	53 20.6	125 02.3	52 49.9	125 49.0	1 49.9
35	+ 55 13.1	126 47.5	+ 54 41.5	127 32.1	+ 54 09.9	128 16.7	1 49.6
40	56 36.7	129 22.7	56 04.1	130 05.3	55 31.5	130 47.9	1 49.4
45	58 02.4	132 04.3	57 28.5	132 44.9	56 54.6	133 25.5	1 49.3
50	59 30.3	134 54.8	58 54.9	135 33.2	58 19.5	136 11.6	1 49.2
55	61 00.8	137 58.7	60 23.6	138 34.4	59 46.4	139 10.1	1 49.2
14 0	62 34.4	141 20.1	61 55.0	141 52.5	61 15.6	142 24.9	1 49.3
5	+ 64 11.6	145 05.5	+ 63 29.6	145 33.1	+ 62 47.6	146 00.7	1 49.4
10	65 52.9	149 24.7	65 07.8	149 45.1	64 22.7	150 05.5	1 49.6
15	67 38.8	154 31.1	66 49.9	154 41.0	66 01.0	154 50.9	1 49.9
20	69 29.7	160 48.3	68 36.1	160 40.4	67 42.5	160 32.5	1 50.3
25	71 26.5	168 57.6 E.	70 27.0	168 17.6	69 27.5	167 37.6	1 50.8
30	73 27.8	179 35.3 W.	72 21.3	178 40.0 E.	71 14.8	176 55.3 E.	1 51.4
35	+ 75 27.8	161 00.3 W.	+ 74 14.5	165 27.1 W.	+ 73 01.2	169 53.9 W.	1 52.1
Limits.	+ 75 34.6	116 00.0 W.	+ 74 56.4	116 45.6 W.	+ 73 46.7	118 06.7 W.	

**PATH OF THE SHADOW DURING THE TOTAL ECLIPSE
OF THE SUN, 1903, SEPTEMBER 20.**

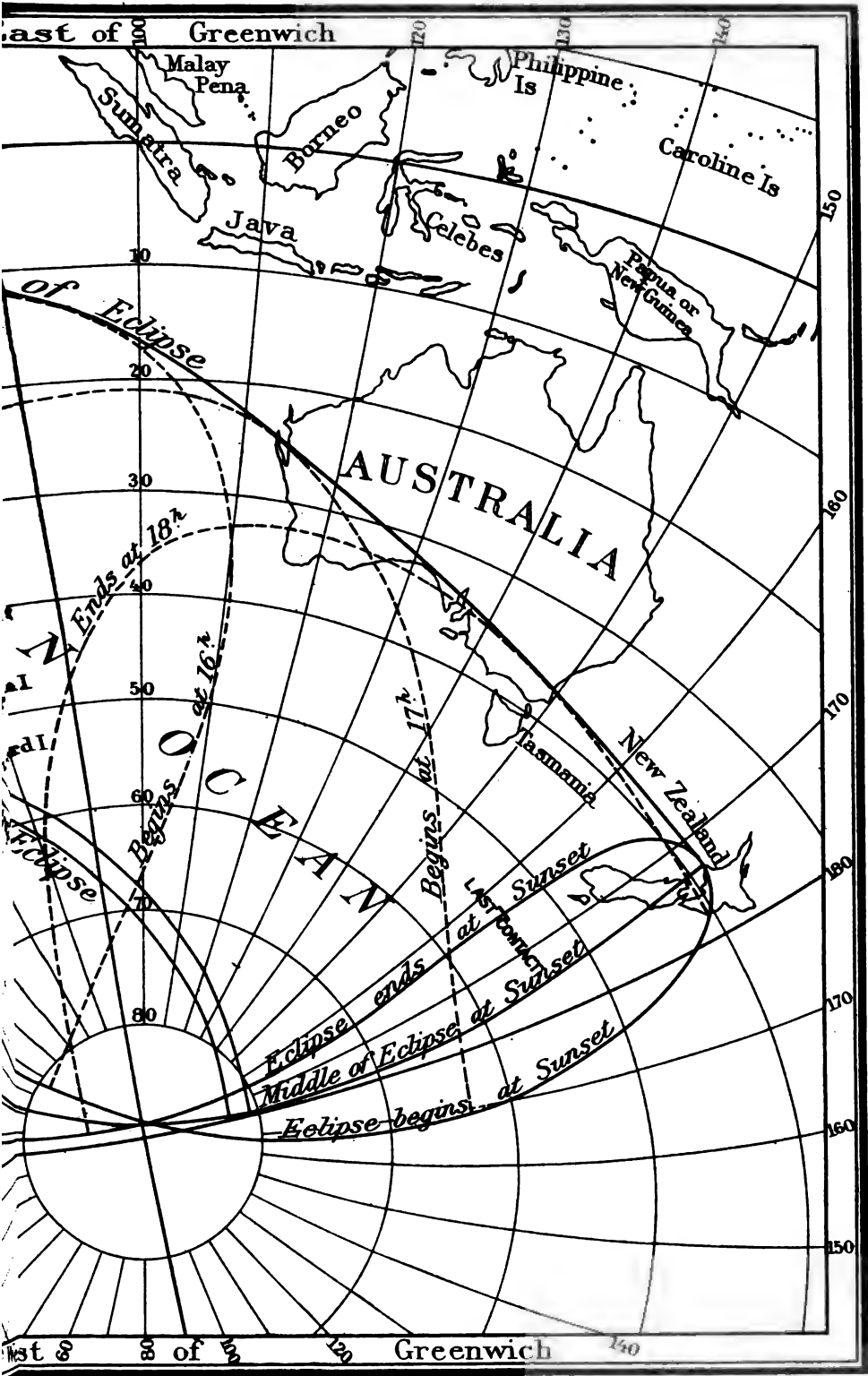
Greenwich Mean Time.	Northern Limit of Annulus or Totality.		Central Line.		Southern Limit of Annulus or Totality.		Duration of Annulus or Totality on Central Line.
	Latitude.	Longitude from Greenwich.	Latitude.	Longitude from Greenwich.	Latitude.	Longitude from Greenwich.	
Limits.	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	m s
15 ^h 55 ^m	- 45 10.6	31 37.8 E.	- 46 17.2	31 13.4 E.	- 46 56.5	31 00.3 E.	
16 0	45 46.0	44 39.0	46 25.9	39 37.3	47 05.8	34 35.6	1 34.9
5	- 46 46.9	51 22.5	- 47 26.6	48 49.6	- 48 06.3	46 16.7	1 47.8
10	47 53.4	56 19.5	48 34.6	54 17.5	49 15.8	52 15.5	1 55.7
15	49 03.1	60 20.7	49 45.8	58 33.8	50 28.5	56 46.9	2 01.4
20	50 16.2	63 50.7	51 00.5	62 12.9	51 44.8	60 35.1	2 06.0
25	51 32.0	67 01.4	52 18.0	65 29.9	53 04.0	63 58.4	2 09.5
30	52 51.0	70 00.5	53 38.7	68 33.9	54 26.4	67 07.3	2 12.1
16 30	- 54 13.4	72 51.8	- 55 02.9	71 29.0	- 55 52.4	70 06.2	2 13.8
35	55 39.4	75 40.7	56 30.9	74 21.2	57 22.4	73 01.7	2 14.7
40	57 09.7	78 31.0	58 03.3	77 14.6	58 56.9	75 58.2	2 14.9
45	58 44.6	81 25.2	59 40.7	80 12.0	60 36.8	78 58.8	2 14.3
50	60 24.9	84 29.3	61 23.8	83 19.8	62 22.7	82 10.3	2 12.9
55	62 11.2	87 48.4	63 13.3	86 43.4	64 15.4	85 38.4	2 10.9
17 0	- 64 04.5	91 27.7	- 65 10.6	90 29.2	- 66 16.7	89 30.7	2 08.0
5	66 08.1	95 40.7	67 19.3	94 52.2	68 30.5	94 03.7	2 04.2
10	68 24.0	100 46.3	69 42.1	100 15.4	71 00.2	99 44.5	1 59.4
15	70 58.3	107 21.7	72 26.6	107 28.4	73 54.9	107 35.1	1 53.2
20	73 46.0	119 24.2	75 32.6	121 19.8	77 19.2	123 15.4	1 44.7
Limits.	- 80 48.2	179 08.2 E.	- 82 00.3	178 32.3 E.	- 82 27.4	178 10.7 E.	

TOTAL ECLIPSE OF SUN



Note: The hours of beginning and ending

SEPTEMBER 20TH, 1903.



are expressed in Greenwich Mean Time.

WASHINGTON MEAN TIME.

PHASES OF THE MOON.

New Moon.				First Quarter.				Full Moon.				Last Quarter.			
d	h	m		d	h	m		d	h	m		d	h	m	
January	27	23	30.3	January	6	04	48.2	January	12	21	09.0	January	19	18	40.8
February	26	17	11.3	February	4	17	04.2	February	11	07	49.6	February	18	13	14.3
March	28	08	17.8	March	6	02	05.7	March	12	19	04.6	March	20	08	59.5
April	26	20	23.1	April	4	08	43.1	April	11	07	10.1	April	19	04	21.9
May	26	05	41.5	May	3	14	17.7	May	10	20	09.7	May	18	22	09.9
June	24	13	02.6	June	1	20	16.0	June	9	09	59.7	June	17	13	35.7
July	23	19	37.8	July	1	03	53.7	July	9	00	34.9	July	17	02	15.9
August	22	02	42.6	July	30	14	06.4	August	7	15	45.9	August	15	12	14.1
September	20	11	22.5	August	29	03	26.1	September	6	07	11.6	September	13	20	05.3
October	19	22	22.0	September	27	20	00.2	October	5	22	15.3	October	13	02	48.1
November	18	12	01.7	October	27	15	24.2	November	4	12	19.2	November	11	09	37.5
December	18	04	17.6	November	26	12	28.3	December	4	01	04.4	December	10	17	44.7
				December	26	09	14.2								

PERIGEE, APOGEE, AND GREATEST LIBRATION.

Perigee.		Apogee.		Greatest Libration.							
	d h		d h		d h m			d h m			
January	12 09.8	January	25 05.2	January	6 05 18 E.			January	18 07 43 W.		
February	9 20.2	February	21 19.9	February	3 04 34 E.			February	15 14 38 W.		
March	9 19.8	March	21 15.5	March	2 02 18 E.			March	15 14 50 W.		
April	5 01.7	April	18 11.7	March	28 08 14 E.			April	12 00 56 W.		
April	30 11.9	May	16 05.8	April	24 13 19 E.			May	8 12 23 W.		
May	28 04.3	June.	12 20.1	May	22 09 02 E.			June	4 02 16 W.		
June	25 09.5	July	10 03.4	June	19 11 34 E.			July	1 17 55 W.		
July	23 18.6	August	6 05.7	July	17 16 10 E.			July	29 20 07 W.		
August	21 03.8	September	2 14.2	August	14 18 11 E.			August	27 00 49 W.		
September	18 09.2	September	30 05.4	September	11 08 04 E.			September	24 03 20 W.		
October	15 22.6	October	28 00.8	October	7 17 31 E.			October	21 22 22 W.		
November	9 20.7	November	24 21.9	November	3 07 56 E.			November	18 00 02 W.		
December	6 15.8	December	22 17.2	November	30 21 49 E.			December	14 03 03 W.		
				December	29 00 19 E.						

FORMULÆ FOR THE LIBRATION OF THE MOON.

Let I = the inclination of the Moon's equator to the ecliptic ($= 1^\circ 28.8'$),

Ω = the mean longitude of the Moon's ascending node, or the mean longitude of the descending node of the Moon's equator,

C = the angle at the center of the Moon's disk made by a lunar meridian with the circle of declination, counted from north to east on the apparent disk,

$\lambda, \beta, a, \delta$ = the apparent longitude, latitude, right ascension, and declination of the Moon, corrected for parallax,

λ' = the selenocentric longitude of the Earth, counted on the Moon's equator from its descending node, Ω .

$i, \Delta, \Omega', \zeta$ = the quantities defined on page 284, where their values for the current year are given.

The Moon's libration in longitude and latitude may then be found, for any time, by means of the following formulæ, in connection with the tables given on pages 284 and 285:—

$$\begin{aligned}
 \mu &= -0.574' \sin 2(\Omega - \lambda) \\
 A &= \sin I \cos (\Omega - \lambda) \\
 \tan B &= \tan I \sin (\Omega - \lambda) \\
 \lambda' &= \lambda + \mu + Ab
 \end{aligned}
 \left. \begin{array}{l} \\ \\ \\ \end{array} \right\} \text{See table, page 285.}$$

The libration in latitude $= b = B - \beta$

The libration in longitude $= l = \lambda' - \zeta$

$$\sin C = \sin i \frac{\cos (\lambda' + \Delta - \Omega)}{\cos \delta} = - \sin i \frac{\cos (a - \Omega')}{\cos \beta}$$

MEAN PLACES FOR 1903.0. (January 0.826 ^d , Washington.)							
Name of Star.	Magni- tude.	Right Ascension.			Annual Proper Motion.	Declination.	Annual Proper Motion.
		h	m	s	s	° ' "	"
60 Piscium	6.2	0	42	22.548	- 0.0001	+ 6 12 40.83	- 0.011
B. A. C. 221	5.7	0	43	17.577	+ 0.0482	4 46 54.91	- 1.145
B. A. C. 274	7.0	0	54	47.834	- 0.0012	5 57 35.83	0.000
73 Piscium	6.4	0	59	50.921	+ 0.0008	5 08 10.86	- 0.004
77 Piscium	6.1	1	00	47.969	- 0.0008	4 23 30.53	- 0.119
<i>ε</i> Piscium	5.7	1	03	22.260	- 0.0195	+ 5 08 11.93	- 0.174
<i>ζ</i> Piscium	5.4	1	08	39.680	+ 0.0082	7 03 45.26	- 0.048
88 Piscium	6.1	1	09	39.565	- 0.0020	6 28 55.98	- 0.028
B. A. C. 410	7.4	1	17	52.296	.....	6 54 16.16	.....
96 Piscium	6.6	1	23	59.209	- 0.0028	6 47 35.84	- 0.065
54 Ceti	5.8	1	45	43.000	- 0.0062	+ 10 33 46.71	- 0.031
B. A. C. 609	6.2	1	54	14.211	.....	11 49 28.23	.....
<i>ξ</i> Arietis	5.4	2	19	36.899	- 0.0007	10 10 16.59	- 0.013
B. A. C. 755	7.0	2	21	33.402	+ 0.0022	10 07 43.93	- 0.019
31 Arietis	5.6	2	31	20.385	+ 0.0177	12 01 37.33	- 0.075
38 Arietis	5.2	2	39	40.309	+ 0.0073	+ 12 02 15.62	- 0.069
W. B. ii, 1033	5.9	3	01	04.040	.....	12 48 48.90	.....
B. A. C. 1119	6.4	3	33	56.436	.....	16 13 16.78	.....
B. A. C. 1206	6.0	3	47	37.160	+ 0.0129	17 02 17.92	- 0.041
B. A. C. 1240	5.7	3	55	13.031	.....	17 55 15.16	.....
B. A. C. 1272	6.3	4	02	26.002	.....	+ 17 04 50.78	.....
W. B. (2) iv, 59	6.4	4	06	57.225	.....	17 01 41.19	.....
55 Tauri	7.3	4	14	21.558	+ 0.0073	16 17 19.43	- 0.050
<i>δ</i> ¹ Tauri	4.0	4	17	20.336	+ 0.0066	17 18 54.79	- 0.025
63 Tauri	5.6	4	17	51.037	+ 0.0066	16 33 03.01	- 0.040
<i>δ</i> ² Tauri	4.7	4	18	30.193	+ 0.0082	+ 17 13 09.90	- 0.046
<i>δ</i> ³ Tauri	4.2	4	19	52.499	+ 0.0065	17 42 22.51	- 0.025
70 Tauri	6.3	4	20	04.898	+ 0.0057	15 43 10.59	- 0.025
75 Tauri	5.3	4	22	53.567	- 0.0009	16 08 35.00	+ 0.008
B. A. C. 1391	4.9	4	25	00.387	+ 0.0055	15 58 59.43	- 0.037
B. A. C. 1394	7.5	4	25	13.4..	.....	+ 15 56 20.29	- 0.025
B. A. C. 1406	7.5	4	28	04.930	+ 0.0001	16 07 07.71	- 0.032
B. A. C. 1468	6.5	4	40	36.749	.....	18 33 35.30	.....
B. A. C. 1526	5.8	4	51	46.109	- 0.0012	17 00 04.77	- 0.028
<i>m</i> Tauri	5.1	5	01	42.969	+ 0.0375	18 30 54.29	+ 0.022
107 Tauri	7.0	5	03	06.865	- 0.0003	+ 19 44 03.03	- 0.007
111 Tauri	5.2	5	18	45.733	+ 0.0157	17 17 36.75	+ 0.006
115 Tauri	5.4	5	21	30.548	+ 0.0006	17 52 45.53	- 0.004
117 Tauri	6.3	5	22	23.692	- 0.0001	17 09 29.91	- 0.081
W. B. (2) v, 606	7.0	5	23	38.708	.....	18 17 13.24	.....
119 Tauri	4.6	5	26	31.487	- 0.0003	+ 18 31 20.09	- 0.002
120 Tauri	5.3	5	27	50.544	+ 0.0005	18 28 17.14	+ 0.006
B. A. C. 1796	7.5	5	36	46.249	+ 0.0005	18 56 22.58	- 0.085
127 Tauri	6.3	5	37	11.179	- 0.0020	18 55 58.64	- 0.042
130 Tauri	5.5	5	41	46.741	- 0.0013	+ 17 41 35.92	+ 0.007

MEAN PLACES FOR 1903.0. (January 0.826^d, Washington.)

Name of Star.	Magni- tude.	Right Ascension.	Annual Proper Motion.	Declination.	Annual Proper Motion.
		h m s	s	° ' "	
χ^2 Orionis	5.8	5 49 12.024	-0.0016	+ 19 43 51.17	+ 0.009
χ^3 Orionis	5.1	5 57 42.860	+0.0016	19 41 32.32	-0.012
68 Orionis	5.6	6 06 16.721	+0.0025	19 48 43.84	-0.026
71 Orionis	5.1	6 09 08.373	-0.0079	19 11 22.66	-0.170
20 Geminorum	6.3	6 26 38.200	+0.0033	17 50 52.84	+0.012
21 Geminorum	6.5	6 26 38.939	+0.0021	+ 17 51 11.03	+0.028
22 Geminorum	7.2	6 28 55.769	-0.0016	19 30 14.81	-0.002
26 Geminorum	5.0	6 36 45.424	-0.0009	17 44 25.30	-0.080
W. B. (2) vi, 1630	6.2	6 56 47.019	....	17 53 36.09	....
51 Geminorum	5.4	7 07 48.077	+0.0003	16 19 25.65	-0.033
λ Geminorum	3.6	7 12 31.116	-0.0039	+ 16 42 55.99	-0.026
W. B. (2) vii, 685	5.6	7 26 12.809	....	17 17 34.51	....
68 Geminorum	5.0	7 28 04.378	-0.0023	16 02 07.11	-0.005
f Geminorum	5.2	7 33 52.514	-0.0019	17 53 45.08	+0.018
1 Cancri	5.9	7 51 29.001	-0.0030	16 02 57.86	-0.026
B. A. C. 2649	6.3	7 52 59.456	....	+ 16 46 48.33	....
5 Cancri	6.4	7 55 58.617	-0.0018	16 43 22.51	+0.003
29 Cancri	5.9	8 23 12.564	-0.0028	14 31 55.40	-0.005
B. A. C. 2872	6.8	8 28 22.721	....	13 35 22.06	....
A ¹ Cancri	5.6	8 37 51.667	-0.0012	13 01 44.47	+0.010
A ² Cancri	5.8	8 41 37.020	-0.0063	+ 12 27 57.48	-0.034
60 Cancri	5.7	8 50 37.817	-0.0019	11 59 48.23	-0.005
α Cancri	4.3	8 53 10.989	+0.0010	12 14 00.14	-0.022
B. A. C. 3122	7.0	9 04 30.174	....	11 57 35.44	....
ω Leonis	5.6	9 23 15.752	+0.0024	9 28 45.27	+0.018
ξ Leonis	5.2	9 26 43.071	-0.0076	+ 11 43 46.70	-0.060
ζ Leonis	5.4	9 26 45.634	-0.0005	10 08 37.35	+0.009
B. A. C. 3398	6.0	9 51 17.454	-0.0077	9 23 34.29	+0.028
11 Sextantis	6.0	9 52 59.339	+0.0003	8 46 37.59	-0.032
16 Sextantis	7.1	10 04 09.910	-0.0018	6 38 46.96	+0.011
43 Leonis	6.5	10 17 55.897	-0.0028	+ 7 02 05.64	-0.091
48 Leonis	5.2	10 29 44.414	-0.0086	7 27 11.28	+0.067
35 Sextantis (1 st star)	6.0	10 38 18.439	0.0000	5 15 21.60	0.000
37 Sextantis	6.2	10 41 02.632	-0.0029	6 53 04.05	-0.028
δ Leonis	5.0	10 55 33.019	-0.0018	4 08 17.93	-0.012
B. A. C. 3836	7.2	11 08 54.461	....	+ 2 47 51.44	....
75 Leonis	5.4	11 12 17.874	+0.0023	2 32 37.97	-0.144
76 Leonis	6.3	11 13 56.186	-0.0045	2 10 55.57	-0.066
79 Leonis	5.5	11 19 03.602	-0.0034	1 56 24.26	+0.008
82 Leonis	6.9	11 20 40.366	-0.0012	3 50 07.53	-0.015
83 Leonis	6.1	11 21 50.647	-0.0514	+ 3 32 30.24	+0.181
W. B. xii, 69	7.3	12 07 35.353	....	- 2 33 32.34	....
B. A. C. 4134	6.0	12 13 10.628	....	3 24 58.08	....
B. A. C. 4135	6.0	12 13 11.037	....	3 24 38.97	....
B. A. C. 4200	5.7	12 22 53.011	....	- 4 04 43.10	....

MEAN PLACES FOR 1903.0. (January 0.826 ^d , Washington.)								
Name of Star.	Magni- tude.	Right Ascension.			Annual Proper Motion.	Declination.	Annual Proper Motion.	
		^h	^m	^s	^s	[°]	[']	
B. A. C. 4225	6.3	12	26	39.465	.....	- 4	31 04.51	.....
<i>f</i> Virginis	5.9	12	31	47.479	-0.0035	5	17 50.73	-0.019
B. A. C. 4294	6.1	12	42	32.554	.....	5	46 14.17	.....
<i>l</i> ¹ Virginis	6.1	13	25	22.007	+0.0018	5	58 10.02	+0.022
<i>h</i> Virginis	5.5	13	27	51.372	-0.0044	9	39 55.20	-0.023
77 Virginis	7.0	13	28	20.390	-0.0052	- 7	07 28.19	0.000
81 Virginis	7.0	13	32	30.150	-0.0030	7	22 37.84	-0.040
B. A. C. 4591	6.2	13	42	05.708	.....	9	13 24.60	.....
W. B. xiii, 825	6.8	13	50	39.9..	.....	9	05 02.5.	.....
95 Virginis	5.7	14	01	34.874	-0.0122	8	51 02.37	+0.015
96 Virginis	6.5	14	03	50.388	-0.0007	- 9	52 31.00	+0.019
97 Virginis	7.0	14	07	23.277	+0.0035	9	26 40.01	-0.037
2 Libræ	6.3	14	18	12.344	-0.0031	11	16 16.26	-0.059
B. A. C. 4772	6.6	14	19	28.048	-0.0030	11	13 46.98	-0.045
B. A. C. 4828	6.0	14	31	50.109	-0.0586	11	53 35.43	+0.387
μ Libræ	5.4	14	43	59.947	-0.0066	- 13	44 41.27	-0.016
ν ¹ Libræ	5.4	15	01	12.840	-0.0043	15	52 52.27	-0.046
σ ¹ Libræ	6.0	15	15	35.927	+0.0007	15	11 56.38	+0.038
σ ² Libræ	6.3	15	17	37.003	-0.0025	14	47 17.11	+0.013
ζ ¹ Libræ	6.2	15	22	47.010	-0.0010	16	22 43.44	-0.046
ζ ³ Libræ	5.8	15	25	11.873	-0.0006	- 16	16 37.29	-0.010
ζ ⁴ Libræ	5.4	15	27	26.216	-0.0028	16	31 27.61	-0.016
γ Libræ	4.0	15	30	05.907	+0.0037	14	27 58.72	+0.019
B. A. C. 5188	6.6	15	37	58.5..	.....	14	43 56.03	-0.102
η Libræ	5.5	15	38	36.766	-0.0045	15	21 51.09	-0.063
θ Libræ	4.3	15	48	18.039	+0.0067	- 16	26 42.14	+0.131
49 Libræ	5.6	15	54	52.811	-0.0474	16	14 52.17	-0.368
χ Ophiuchi	5.0	16	21	23.989	-0.0019	18	14 12.27	-0.043
ϕ Ophiuchi	4.4	16	25	35.060	-0.0051	16	24 05.80	-0.028
24 Scorpii	5.2	16	35	57.646	-0.0027	17	33 17.26	+0.018
29 Ophiuchi	6.5	16	56	10.658	-0.0051	- 18	44 35.47	+0.004
B. A. C. 5771	6.2	17	02	36.782	.....	17	28 51.13	.....
B. A. C. 5839	6.0	17	14	14.562	.....	17	39 18.62	.....
B. A. C. 6060	6.5	17	50	12.593	.....	18	47 06.72	.....
Y Sagittarii	Var.	18	15	40.550	.....	18	54 12.19	.....
B. A. C. 6287	6.0	18	24	29.709	.....	- 18	47 24.33	.....
B. A. C. 6292	7.5	18	25	37.520	-0.0103	18	58 14.30	-0.202
B. A. C. 6294	5.2	18	25	45.292	.....	18	28 09.57	.....
ρ ¹ Sagittarii	3.9	19	16	02.810	-0.0033	18	01 48.50	+0.026
ν Sagittarii	4.7	19	16	10.278	-0.0013	16	08 15.30	-0.009
B. A. C. 6658	7.0	19	22	26.750	.....	- 18	33 20.14	.....
ϵ ¹ Sagittarii	5.6	19	35	09.975	+0.0026	16	30 57.83	-0.039
ϵ ² Sagittarii	5.0	19	36	58.205	+0.0027	16	21 06.09	-0.007
B. A. C. 6746	5.5	19	38	01.394	.....	15	41 40.16	.....
ζ Sagittarii	5.0	19	52	26.935	-0.0014	- 15	44 56.71	-0.081

MEAN PLACES FOR 1903.0. (January 0.826^d, Washington.)

Name of Star.	Magni- tude.	Right Ascension.	Annual Proper Motion.	Declination.	Annual Proper Motion.
		^h ^m ^s	^s	[°] ['] ["]	["]
B. A. C. 6992 . . .	6.2	20 15 19.561	- 0.0002	- 15 05 28.16	0.000
β Capricorni . . .	3.4	20 15 33.688	+ 0.0008	15 05 17.15	+ 0.022
B. A. C. 7009 . . .	7.0	20 18 00.740	.....	14 34 04.60	....
B. A. C. 7063 . . .	6.2	20 25 38.330	.....	15 22 50.41	....
B. A. C. 7087 . . .	6.2	20 28 47.652	.....	14 03 19.67	....
τ^1 Capricorni . . .	7.0	20 31 54.994	+ 0.0052	- 15 29 00.74	- 0.040
τ^2 Capricorni . . .	5.3	20 33 50.933	- 0.0012	15 17 43.90	- 0.012
B. A. C. 7221 . . .	5.3	20 45 21.043	+ 0.0094	12 54 15.60	- 0.057
B. A. C. 7242 . . .	6.5	20 47 47.234	.....	11 56 27.09	....
8 Aquarii . . .	6.8	20 54 35.001	- 0.0039	13 26 19.67	- 0.001
9 Aquarii . . .	7.0	20 55 47.544	- 0.0029	- 13 54 34.77	- 0.006
ν Aquarii . . .	4.6	21 04 18.618	+ 0.0043	11 45 53.29	- 0.007
19 Aquarii . . .	5.7	21 20 00.219	- 0.0021	10 09 42.30	- 0.167
ϵ^1 Capricorni . . .	5.2	21 39 49.917	- 0.0023	9 31 41.07	+ 0.020
ϵ^2 Capricorni . . .	6.2	21 41 05.762	- 0.0015	9 43 25.47	+ 0.001
B. A. C. 7620 . . .	6.5	21 48 24.836	.....	- 10 46 07.10	....
30 Aquarii . . .	5.6	21 58 10.302	+ 0.0010	6 59 28.88	+ 0.013
36 Aquarii . . .	6.3	22 04 19.108	+ 0.0021	8 39 45.87	+ 0.045
B. A. C. 7717 . . .	6.5	22 04 22.742	+ 0.0047	8 00 45.67	- 0.470
ρ Aquarii . . .	5.4	22 15 05.664	- 0.0008	8 18 30.57	+ 0.007
B. A. C. 7793 . . .	7.5	22 16 19.237	.....	- 6 43 53.18	....
B. A. C. 7804 . . .	6.1	22 18 27.0..	.....	7 41 03.6.	....
51 Aquarii . . .	5.8	22 19 03.666	- 0.0010	5 19 40.80	+ 0.002
W. B. xxii, 493 . . .	6.2	22 26 12.836	.....	7 02 59.01	....
κ Aquarii . . .	5.5	22 32 43.951	- 0.0060	4 43 42.61	- 0.108
Lalande 44337 . . .	6.3	22 35 46.4..	.....	- 4 03 27.2.	....
67 Aquarii . . .	6.2	22 38 10.281	- 0.0029	7 28 15.16	+ 0.023
B. A. C. 7951 (mean) . . .	6.7	22 42 49.973	- 0.0150	4 43 55.52	- 0.286
B. A. C. 7986 . . .	5.8	22 50 09.116	.....	5 30 17.48	....
Lalande 44872 . . .	7.0	22 52 06.7..	.....	3 45 47.5.	....
B. A. C. 7993 . . .	6.6	22 52 15.889	- 0.0031	- 5 19 43.19	0.000
B. A. C. 8017 . . .	6.1	22 56 30.4..	.....	5 14 02.3.	....
B. A. C. 8094 . . .	5.6	23 10 34.445	.....	4 01 30.89	....
11 Piscium . . .	6.5	23 24 28.225	- 0.0034	2 19 31.14	+ 0.008
12 Piscium . . .	6.8	23 24 31.940	- 0.0009	1 34 09.33	- 0.010
13 Piscium . . .	6.4	23 26 58.906	- 0.0005	- 1 37 17.29	+ 0.023
14 Piscium . . .	5.9	23 29 09.720	+ 0.0060	- 1 47 00.04	- 0.004
21 Piscium . . .	6.1	23 44 29.430	- 0.0016	+ 0 32 14.82	- 0.031
25 Piscium . . .	6.3	23 48 06.554	- 0.0015	+ 1 33 03.97	- 0.005
W. B. xxiii, 1069 . . .	6.9	23 54 48.276	.....	- 0 49 11.28	....

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

JANUARY.

THE STAR'S				AT CONJUNCTION IN R. A.						Limiting Parallels.	
Name.	Mag.	Red'ns from 1903.A.		Apparent Declination.	Washington Mean Time.	Hour Angle, <i>H</i>	<i>Y</i>	<i>x'</i>	<i>y'</i>	N.	S.
		$\Delta\alpha$	$\Delta\delta$		d h m	h m				°	°
8 Aquarii	6.8	-0.80	+4.5	-13 26.3	1 3 19.2	+ 1 05.8	+0.9612	0.5339	+0.1350	+77	+22
ν Aquarii	4.6	0.75	4.5	11 45.8	8 14.3	+ 5 52.1	-0.2108	0.5327	0.1399	+19	-47
19 Aquarii	5.7	0.69	4.2	10 09.6	16 12.1	-10 24.5	-0.8328	0.5318	0.1473	-15	-90
ϵ Capricorni	5.2	0.61	3.5	9 31.6	2 18.3	- 0 36.5	+0.0031	0.5304	0.1556	+32	-34
ϵ Capricorni	6.2	0.61	3.5	9 43.4	2 57.0	+ 0 01.0	+0.3185	0.5303	0.1561	+51	-17
30 Aquarii	5.6	-0.51	+3.6	- 6 59.4	11 40.8	+ 8 29.1	-1.2847	0.5295	+0.1624	-55	-90
36 Aquarii	6.3	0.51	2.9	8 39.7	14 49.6	+11 32.3	+1.0590	0.5293	0.1645	+81	+28
B. A. C. 7717	6.5	0.50	3.1	8 00.7	14 51.4	+11 34.0	+0.3529	0.5293	0.1645	+54	-15
θ Aquarii	4.3	0.47	2.7	8 15.9	18 36.9	- 8 47.2	+1.2524	0.5292	0.1669	+82	+48
B. A. C. 7793	7.5	0.44	3.0	6 43.8	20 58.4	- 6 29.9	-0.0294	0.5291	0.1682	+31	-36
B. A. C. 7804	6.1	-0.44	+2.6	- 7 41.0	22 03.9	- 5 26.3	+1.1943	0.5290	+0.1688	+82	+41
51 Aquarii	5.8	0.41	3.3	5 19.6	22 22.7	- 5 08.0	-1.3237	0.5291	0.1694	-63	-90
W.B. xxii, 493	6.2	0.40	2.5	7 02.9	2 02.4	- 1 34.9	+1.1762	0.5290	0.1710	+83	+39
κ Aquarii	5.5	0.35	2.9	4 43.7	5 22.7	+ 1 39.5	-0.7778	0.5291	0.1726	-10	-90
Lalande 44337	6.3	0.33	3.0	4 03.4	6 56.1	+ 3 10.0	-1.2377	0.5291	0.1733	-47	-90
B.A.C. 7951(mean)	6.7	-0.30	+2.5	- 4 43.9	10 32.7	+ 7 40.2	+0.1249	0.5293	+0.1749	+41	-28
Lalande 44872	7.0	0.25	2.5	3 45.7	15 17.0	+11 16.0	-0.0927	0.5296	0.1768	+42	-40
11 Piscium	6.5	0.07	1.6	2 19.5	4 7 43.8	+ 3 13.1	+1.2980	0.5319	0.1811	+88	+54
12 Piscium	6.8	0.06	1.8	1 34.1	7 45.7	+ 3 15.0	+0.4906	0.5318	0.1811	+66	- 8
13 Piscium	6.4	0.05	1.7	1 37.3	8 59.9	+ 4 26.9	+0.7705	0.5322	0.1813	+88	+ 8
14 Piscium	5.9	-0.04	+1.6	- 1 47.0	10 05.9	+ 5 30.9	+1.1434	0.5324	+0.1814	+88	+35
21 Piscium	6.1	+0.06	1.8	+ 0 32.3	17 48.2	-11 00.9	-0.0539	0.5342	0.1821	+38	-31
25 Piscium	6.3	0.10	2.0	1 33.1	19 36.9	- 9 15.5	-0.7000	0.5348	0.1822	- 4	-87
60 Piscium	6.2	0.44	1.3	6 12.7	5 22 15.5	- 7 26.7	-0.8184	0.5449	0.1776	-12	-84
B. A. C. 221	5.7	0.43	0.7	4 46.9	22 41.9	- 7 01.2	+0.7647	0.5451	0.1774	+90	+10
B. A. C. 274	7.0	+0.51	+0.7	+ 5 57.6	6 4 12.0	- 1 41.7	+0.4950	0.5453	+0.1752	+67	- 6
ϵ Piscium	4.5	0.55	1.1	7 22.1	5 40.6	- 0 16.0	-0.7233	0.5486	0.1749	- 6	-83
ζ Piscium	5.4	0.60	0.5	7 03.8	10 45.2	+ 4 38.7	+0.4762	0.5514	0.1719	+65	- 7
88 Piscium	6.1	0.60	+0.2	6 28.9	11 13.3	+ 5 05.8	+1.1627	0.5517	0.1716	+90	+39
ϕ Piscium	4.4	0.80	-0.4	8 40.2	7 1 22.1	- 5 13.7	+1.2405	0.5603	0.1619	+90	+50
54 Ceti	5.8	+0.85	0.0	+10 33.8	3 50.4	- 2 50.4	-0.3207	0.5619	+0.1598	+17	-51
B. A. C. 609	6.2	0.92	+0.1	11 49.5	7 40.7	+ 0 52.0	-1.0139	0.5645	0.1565	-26	-78
31 Arietis	5.6	1.12	-1.6	12 01.6	23 59.4	- 7 23.8	+1.1931	0.5760	0.1389	+90	+48
σ Arietis	5.5	1.23	1.5	14 40.9	8 6 19.0	- 1 17.9	-0.6567	0.5806	0.1307	- 2	-71
B. A. C. 1119	6.4	1.48	3.4	16 13.2	9 2 06.8	- 6 13.7	+0.0916	0.5950	0.1002	+40	-19
B. A. C. 1206	6.0	+1.55	-3.9	+17 02.2	7 36.8	- 0 57.3	-0.2021	0.5988	+0.0904	+23	-35
B. A. C. 1240	5.7	1.59	4.0	17 55.2	10 38.4	+ 1 57.1	-0.8179	0.6007	0.0847	-13	-72
B. A. C. 1272	6.3	1.61	4.6	17 04.8	13 29.9	+ 4 41.8	+0.2552	0.6026	0.0793	+50	- 8
W.B.(2),iv, 59	6.4	1.63	4.9	17 01.6	15 16.7	+ 6 24.4	+0.4455	0.6038	0.0758	+63	+ 2
δ^1 Tauri	4.0	1.67	5.3	17 18.8	19 20.8	+10 18.8	+0.4513	0.6061	0.0682	+65	+ 4
63 Tauri	5.6	+1.66	-5.5	+16 33.0	19 32.9	+10 30.4	+1.2241	0.6063	+0.0673	+90	+60
δ^2 Tauri	4.7	1.67	5.4	17 13.1	19 48.1	+10 45.1	+0.5770	0.6064	0.0668	+76	+11
δ^3 Tauri	4.2	1.68	5.3	17 42.3	20 20.2	+11 15.8	+0.1288	0.6067	0.0657	+42	-14
ϵ Tauri	3.7	1.71	5.2	18 57.8	21 32.0	-11 35.3	-1.0439	0.6074	0.0633	-30	-71
B. A. C. 1468	6.5	1.77	6.2	18 33.5	10 4 21.5	- 5 02.2	+0.2563	0.6110	0.0489	+20	-34
i Tauri	5.1	+1.78	-6.4	+18 40.4	6 18.6	- 3 09.9	-0.2784	0.6120	+0.0447	+19	-35
m Tauri	5.1	1.83	7.2	18 30.8	12 25.3	+ 2 41.8	+0.1122	0.6147	0.0313	+41	-12
107 Tauri	7.0	1.85	7.0	19 43.9	12 57.2	+ 3 12.4	-1.0731	0.6149	0.0301	-33	-70
115 Tauri	5.4	1.86	8.2	17 52.6	19 54.7	+ 9 52.7	+0.9080	0.6173	0.0143	+90	+36
W.B.(2),v, 606	7.0	1.87	8.3	18 17.1	20 43.0	+10 38.9	+0.5178	0.6175	0.0125	+70	+13
119 Tauri	4.6	+1.88	-8.4	+18 31.2	21 48.0	+11 41.2	+0.2987	0.6179	+0.0100	+53	+ 1
120 Tauri	5.3	1.88	8.4	18 28.1	22 17.8	-11 50.2	+0.3532	0.6180	0.0088	+57	+ 4
B. A. C. 1796	7.5	1.91	8.8	18 56.2	11 1 39.0	- 8 37.4	-0.0898	0.6188	0.0011	+29	-20
127 Tauri	6.3	1.91	8.8	18 55.8	1 48.4	- 8 28.4	-0.0831	0.6189	+0.0007	+30	-20
130 Tauri	5.5	1.90	9.1	17 41.4	3 31.7	- 6 49.4	+1.1307	0.6192	-0.0033	+90	+55
χ^2 Orionis	5.8	+1.94	-9.2	+19 43.7	6 18.5	- 4 09.6	-0.8853	0.6197	-0.0097	-18	-70

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

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THE STAR'S					AT CONJUNCTION IN R. A.							Limiting Parallels.	
Name.	Mag.	Red'n's from 1903.0.		Apparent Declination.	Washington Mean Time.	Hour Angle, <i>H</i>	<i>Y'</i>	<i>x'</i>	<i>y'</i>	<i>N.</i>	<i>S.</i>		
		$\Delta\alpha$	$\Delta\delta$										
χ^3 Orionis	5.1	+1.95	-9.6	+19 41.4	11 9 29.5	-1 06.5	-0.8894	0.6201	-0.0171	-18	-70		
68 Orionis	5.6	1.96	9.9	19 48.6	12 41.5	+1 57.4	-1.0730	0.6204	0.0246	-33	-70		
71 Orionis	5.1	1.96	10.1	19 11.2	13 45.6	+2 58.8	-0.4910	0.6205	0.0271	+7	-48		
20 Geminorum	6.3	1.96	10.9	17 50.7	20 17.7	+9 14.4	+0.5948	0.6206	0.0422	+78	+14		
21 Geminorum	6.5	1.96	10.9	17 51.0	20 18.0	+9 14.7	+0.5897	0.6206	0.0422	+78	+14		
22 Geminorum	7.2	+1.98	-10.9	+19 30.1	21 09.1	+10 03.7	-1.0608	0.6204	-0.0441	-34	-70		
26 Geminorum	5.0	1.96	11.3	17 44.2	12 04.7	-11 12.0	+0.5241	0.6201	0.0507	+71	+9		
W.B.(2), vi, 1630	6.2	1.97	12.0	17 53.4	7 35.0	-3 56.5	-0.0697	0.6189	0.0675	+30	-24		
51 Geminorum	5.4	1.95	12.4	16 19.2	11 43.7	+0 01.9	+1.1646	0.6179	0.0765	+90	+52		
λ Geminorum	3.6	1.96	12.5	16 42.7	13 30.4	+1 44.1	+0.6423	0.6174	0.0803	+84	+13		
W.B.(2), vii, 685	5.6	+1.95	-12.9	+17 17.4	18 41.5	+6 42.5	-0.3660	0.6157	-0.0911	+14	-45		
68 Geminorum	5.0	1.94	12.9	16 01.9	19 23.8	+7 23.0	+0.7979	0.6155	0.0926	+90	+22		
ζ Geminorum	5.2	1.95	13.1	17 53.5	21 36.2	+9 29.9	-1.2296	0.6146	0.0970	-50	-72		
1 Cancri	5.9	1.92	13.5	16 02.7	13 4 20.4	-8 02.4	-0.1225	0.6117	0.1101	+28	-32		
B. A. C. 2649	6.3	1.92	13.5	16 46.6	4 55.3	-7 28.9	-0.9018	0.6114	0.1112	-18	-73		
5 Cancri	6.4	+1.92	-13.6	+16 43.1	6 04.2	-6 22.8	-0.9751	0.6110	-0.1133	-24	-73		
29 Cancri	5.9	1.86	13.9	14 31.7	16 39.5	+3 47.0	-0.1283	0.6054	0.1317	+27	-34		
B. A. C. 2872	6.8	1.85	13.9	13 35.1	18 41.5	+5 44.1	+0.5259	0.6043	0.1349	+70	+1		
A ¹ Cancri	5.6	1.83	13.9	13 01.5	22 26.4	+9 20.2	+0.5606	0.6021	0.1407	+73	+3		
A ² Cancri	5.8	1.82	13.8	12 27.7	23 55.9	+10 46.2	+0.9030	0.6012	0.1429	+90	+23		
60 Cancri	5.7	+1.80	-13.9	+11 59.6	14 3 31.8	-9 46.4	+0.8427	0.5989	-0.1480	+90	+19		
α Cancri	4.3	1.79	13.9	12 13.8	4 33.3	-8 47.3	+0.4574	0.5984	0.1498	+64	-4		
κ Cancri	5.0	1.77	13.8	11 03.3	8 18.5	-5 10.7	+1.0468	0.5962	0.1543	+90	+33		
B. A. C. 3122	7.0	1.76	13.9	11 57.4	9 07.3	-4 23.8	+0.0316	0.5955	0.1553	+36	-28		
ω Leonis	5.6	1.71	13.5	9 28.5	16 47.2	+2 58.6	+1.2608	0.5906	0.1642	+90	+54		
ξ Leonis	5.2	+1.69	-13.8	+11 43.5	18 12.7	+4 20.9	-1.2039	0.5897	-0.1657	-43	-78		
λ Leonis	5.4	1.70	13.6	10 08.4	18 13.8	+4 21.9	+0.3652	0.5897	0.1658	+58	-11		
ν Leonis	3.8	1.67	13.5	10 19.8	22 03.1	+8 02.6	-0.4643	0.5873	0.1695	+9	-60		
B. A. C. 3398	6.0	1.62	13.2	9 23.4	15 4 28.7	-9 46.0	-0.6383	0.5831	0.1751	-1	-75		
11 Sextantis	6.0	1.62	13.1	8 46.4	5 11.7	-9 04.5	-0.1503	0.5824	0.1757	+26	-41		
π Leonis	5.0	+1.61	-13.0	+8 30.4	6 05.1	-8 13.1	-0.0404	0.5820	-0.1764	+32	-35		
16 Sextantis	7.1	1.59	12.5	6 38.6	9 56.8	-4 29.9	+1.1351	0.5796	0.1792	+90	+37		
43 Leonis	6.5	1.54	12.3	7 01.9	15 51.9	+1 12.4	-0.3243	0.5759	0.1828	+17	-52		
35 Sext. (1 st star)	6.0	1.47	11.5	5 15.2	16 0 45.6	+9 47.2	-0.1807	0.5706	0.1868	+24	-45		
δ Leonis	5.0	1.41	10.8	4 08.1	8 24.7	-6 49.7	-0.4900	0.5663	0.1889	+8	-66		
ρ^2 Leonis	5.7	+1.39	-10.2	+2 28.8	11 16.9	-4 03.4	+0.6487	0.5649	-0.1894	+81	+1		
B. A. C. 3836	7.2	1.36	10.0	2 47.7	14 24.8	-1 01.9	-0.2660	0.5631	0.1898	+20	-50		
75 Leonis	5.4	1.35	9.9	2 32.5	15 56.7	+0 26.8	-0.2983	0.5623	0.1900	+18	-52		
76 Leonis	6.3	1.35	9.7	2 10.8	16 41.3	+1 09.8	-0.0709	0.5620	0.1900	+31	-38		
79 Leonis	5.5	1.32	9.5	+1 56.2	19 01.0	+3 24.8	-0.2666	0.5608	0.1900	+19	-50		
ν Leonis	4.5	+1.29	-8.4	-0 17.4	17 0 55.7	+9 07.7	+0.8933	0.5581	-0.1898	+90	+17		
W.B. xii, 69	7.3	1.14	6.4	2 33.6	17 29.5	+1 08.6	+0.1253	0.5514	0.1859	+41	-28		
B. A. C. 4134	6.0	1.12	5.9	3 25.1	20 07.4	+3 41.3	+0.5289	0.5505	0.1849	+69	-6		
B. A. C. 4135	6.0	1.12	5.9	3 24.7	20 07.6	+3 41.5	+0.5225	0.5505	0.1849	+68	-6		
B. A. C. 4200	5.7	1.08	5.3	4 04.8	18 0 42.8	+8 07.7	+0.3760	0.5490	0.1829	+57	-14		
B. A. C. 4225	6.3	+1.07	-5.0	-4 31.2	2 30.3	+9 51.7	+0.5083	0.5485	-0.1820	+67	-7		
ζ Virginis	5.9	1.05	4.6	5 17.9	4 56.7	-11 46.6	+0.8818	0.5478	0.1808	+85	+15		
B. A. C. 4294	6.1	1.01	4.0	5 46.3	10 04.6	-6 48.6	+0.4596	0.5465	0.1779	+63	-9		
δ Virginis	5.5	0.81	0.7	9 39.9	19 7 55.1	-9 39.8	-0.8656	0.5426	0.1620	+80	+15		
B. A. C. 4591	6.2	0.74	-0.3	9 13.4	14 50.0	-2 58.0	-0.7050	0.5419	0.1558	-8	-90		
λ Virginis	4.6	+0.61	+2.2	-12 55.5	20 6 18.2	-11 59.1	+0.9788	0.5411	-0.1403	+77	+23		
2 Libræ	6.3	0.57	1.8	11 16.2	8 25.4	-9 55.8	-1.1015	0.5411	0.1380	-38	-90		
B. A. C. 4772	6.6	0.56	1.8	11 13.8	9 02.3	-9 20.1	-1.2314	0.5411	0.1373	-52	-90		
μ Libræ	5.4	0.46	3.6	13 44.6	21 00.0	+2 15.1	-0.0706	0.5413	0.1235	+24	-39		
ν Libræ	5.4	0.38	4.9	15 52.8	21 5 23.3	+10 22.5	+1.2656	0.5416	0.1130	+74	+55		
α Libræ	6.0	+0.29	+5.1	-15 11.9	12 23.4	-6 50.7	-0.2386	0.5421	-0.1040	+13	-49		

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

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THE STAR'S					AT CONJUNCTION IN R. A.							Limiting Parallels.	
Name.	Mag.	Red'ns from 1903.0.		Apparent Declination.	Washington Mean Time.	Hour Angle, <i>H</i>	<i>Y</i>	<i>x'</i>	<i>y'</i>	<i>N.</i>	<i>S.</i>		
		$\Delta\alpha$	$\Delta\delta$										
		<i>s</i>	<i>"</i>	<i>°</i>	<i>d</i> <i>h</i> <i>m</i>	<i>h</i> <i>m</i>				<i>°</i>	<i>°</i>		
♌ Libræ	6.3	+0.28	+5.0	-14 47.2	21 13 22.3	- 5 53.6	-0.7898	0.5421	-0.1027	-19	-90		
♌ Libræ	6.2	0.26	5.6	16 22.6	15 53.0	- 3 27.7	+0.6980	0.5423	0.0993	+73	+ 5		
♌ Libræ	5.8	0.25	5.7	16 16.5	17 03.4	- 1 19.5	+0.4713	0.5424	0.0977	+54	- 8		
♌ Libræ	5.4	0.24	5.8	16 31.4	18 08.7	- 1 16.2	+0.6370	0.5424	0.0962	+67	+ 1		
♌ Libræ	5.5	0.18	5.7	15 21.8	23 34.2	+ 3 59.0	-1.1385	0.5430	0.0887	-47	-90		
♌ Libræ	4.3	+0.13	+6.3	-16 26.6	22 4 16.1	+ 8 32.0	-0.3529	0.5433	-0.0821	+ 4	-57		
49 Libræ	5.6	+0.09	6.4	16 14.8	7 27.4	+11 37.2	-0.8251	0.5436	0.0775	-24	-90		
χ Ophiuchi	5.0	-0.02	7.5	18 14.1	20 17.0	+ 0 02.4	+0.4942	0.5446	0.0586	+52	- 6		
24 Scorpui	5.2	0.10	7.5	17 33.2	23 18.6	+ 6 50.5	-0.6342	0.5452	0.0479	-15	-83		
29 Ophiuchi	6.5	0.19	8.0	18 44.5	13 03.2	- 7 43.5	+0.2884	0.5458	0.0328	+35	-18		
B. A. C. 5771	6.2	-0.22	+7.7	-17 28.7	16 09.1	- 4 43.4	-1.2056	0.5460	-0.0280	-61	-90		
B. A. C. 5839	6.0	0.27	7.8	17 39.2	21 45.0	+ 0 41.8	-1.1449	0.5462	-0.0191	-55	-90		
B. A. C. 6060	6.5	0.41	8.1	18 47.0	24 15 03.5	- 6 32.8	+0.0161	0.5466	+0.0084	+16	-34		
Y Sagittarii	<i>Var.</i>	0.50	8.0	18 54.1	25 3 19.7	+ 5 19.8	+0.3692	0.5463	0.0277	+40	-14		
B. A. C. 6287	6.0	0.53	7.9	18 47.3	7 35.1	+ 9 27.1	+0.3754	0.5461	0.0344	+41	-13		
B. A. C. 6292	7.5	-0.53	+7.9	-18 58.1	8 07.8	+ 9 58.8	+0.5952	0.5461	+0.0352	+58	0		
B. A. C. 6294	5.2	0.53	7.8	18 28.0	8 11.6	+10 02.5	+0.0400	0.5461	0.0353	+21	-32		
NEW MOON.													
36 Aquarii	6.3	0.58	1.9	8 39.7	29 20 26.2	- 5 03.6	+0.8796	0.5331	0.1636	+81	+16		
B. A. C. 7717	6.5	-0.58	+1.9	- 8 00.7	20 28.0	- 5 01.9	+0.1740	0.5331	+0.1636	+42	-25		
♐ Aquarii	4.3	0.56	1.7	8 16.0	30 0 11.6	- 1 25.1	+1.0648	0.5328	0.1659	+82	+29		
B. A. C. 7793	7.5	0.54	1.7	6 43.9	2 32.0	+ 0 51.1	-0.2207	0.5327	0.1673	+21	-47		
B. A. C. 7804	6.1	0.54	1.5	7 41.0	3 37.0	+ 1 54.2	+1.0002	0.5326	0.1679	+82	+24		
W. B. xxii, 493	6.2	0.52	1.3	7 03.0	7 33.8	+ 5 43.8	+0.9747	0.5325	0.1701	+83	+22		
♐ Aquarii	5.5	-0.48	+1.4	- 4 43.7	10 52.7	+ 8 56.8	-0.9857	0.5325	+0.1718	-24	-90		
B. A. C. 7951 (mean)	6.7	0.45	1.0	4 43.9	16 00.7	-10 04.5	-0.0929	0.5324	0.1741	+28	-40		
Lalande 44872	7.0	0.42	+0.9	3 45.8	20 43.7	- 5 30.0	-0.3185	0.5325	0.1760	+17	-54		
11 Piscium	6.5	0.30	-0.1	2 19.5	31 13 07.6	+10 24.3	+1.0493	0.5337	0.1802	+88	+27		
12 Piscium	6.8	0.29	+0.1	1 34.2	13 09.4	+10 26.1	+0.2393	0.5337	0.1802	+48	-21		
13 Piscium	6.4	-0.28	0.0	- 1 37.3	14 23.6	+11 38.0	+0.5184	0.5338	+0.1804	+68	- 6		
14 Piscium	5.9	0.28	-0.1	- 1 47.0	15 29.7	-11 18.0	+0.8914	0.5340	0.1805	+88	+16		
21 Piscium	6.1	-0.19	-0.2	+ 0 32.2	23 12.5	- 3 49.2	-0.2116	0.5351	+0.1811	+23	-47		

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25 Piscium	6.3	-0.17	0.0	+ 1 33.1	1 1 01.4	- 2 03.6	-0.9712	0.5354	+0.1811	-22	-88
60 Piscium	6.2	+0.11	-0.7	6 12.7	2 3 52.6	- 0 02.3	-1.1170	0.5425	0.1761	-33	-84
B. A. C. 221	5.7	0.11	1.3	4 46.9	4 19.4	+ 0 23.7	+0.4792	0.5427	0.1759	+65	- 8
B. A. C. 274	7.0	0.17	1.3	5 57.6	9 54.2	+ 5 47.9	+0.2048	0.5447	0.1736	+46	-22
♑ Piscium	4.5	+0.20	-1.0	+ 7 22.1	11 24.3	+ 7 15.2	-1.0250	0.5453	+0.1729	-26	-83
♑ Piscium	5.4	0.25	1.5	7 03.7	16 34.1	-11 15.0	+0.1845	0.5474	0.1701	+45	-22
88 Piscium	6.1	0.25	1.8	6 28.9	17 02.7	-11 17.3	+0.8779	0.5476	0.1699	+90	+17
B. A. C. 410	7.4	0.29	2.0	6 54.2	20 57.4	- 7 30.2	+1.0910	0.5493	0.1675	+90	+33
♑ Piscium	4.4	0.43	2.3	8 40.1	3 7 29.8	+ 2 41.5	+0.9592	0.5542	0.1600	+90	+24
54 Ceti	5.8	+0.48	-1.8	+10 33.7	10 01.7	+ 5 08.4	-0.6214	0.5555	+0.1579	0	-73
31 Arietis	5.6	0.74	3.3	12 01.6	4 6 46.0	+ 1 10.4	+0.9250	0.5609	0.1371	+90	+25
♈ Arietis	5.5	0.86	3.0	14 40.9	13 18.4	+ 7 29.2	-0.9490	0.5708	0.1294	-21	-75
B. A. C. 1119	6.4	1.13	4.5	16 13.2	5 9 50.7	+ 3 17.0	-0.1655	0.5833	0.0993	+25	-34
B. A. C. 1206	6.0	1.21	4.8	17 02.2	15 33.8	+ 8 47.5	-0.4567	0.5867	0.0897	+ 9	-52
B. A. C. 1240	5.7	+1.26	-4.9	+17 55.2	18 42.7	+11 49.3	-1.0789	0.5886	+0.0843	-33	-72
B. A. C. 1272	6.3	1.29	5.5	17 04.8	21 41.1	+ 9 19.1	+0.0180	0.5903	0.0790	+36	-21
W. B. (2), iv, 59	6.4	1.31	5.7	17 01.6	23 32.3	- 7 32.0	+0.2147	0.5914	0.0756	+47	-10
55 Tauri	7.3	1.34	6.3	16 17.2	6 2 33.7	- 4 37.7	+1.1832	0.5930	0.0701	+90	+54
♉ Tauri	4.0	1.37	6.1	17 18.8	3 46.5	- 3 27.7	+0.2276	0.5936	0.0678	+48	- 8
63 Tauri	5.6	+1.36	-6.3	+16 32.9	3 59.0	- 3 15.6	+1.0149	0.5937	+0.0674	+90	+39

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

FEBRUARY.

THE STAR'S				AT CONJUNCTION IN R. A.						Limiting Parallels.	
Name.	Mag.	Red'ns from 1903.0.		Apparent Declination.	Washington Mean Time.	Hour Angle, <i>H</i>	<i>Y</i>	<i>x'</i>	<i>y'</i>	N.	S.
		$\Delta\alpha$	$\Delta\delta$								
		s	"	°	d h m	h m				°	°
δ^2 Tauri	4.7	+1.37	-6.1	+17 13.1	6 4 14.7	-3 00.5	+0.3561	0.5939	+0.0669	+57	-2
δ^3 Tauri	4.2	1.39	6.0	17 42.3	4 48.2	-2 28.3	-0.0992	0.5942	0.0659	+29	-27
B. A. C. 1468	6.5	1.49	6.7	18 33.5	13 09.3	+5 33.5	-0.4765	0.5985	0.0496	+8	-49
<i>i</i> Tauri	5.1	1.52	6.9	18 40.4	15 11.2	+7 30.6	-0.4952	0.5994	0.0455	+6	-50
<i>m</i> Tauri	5.1	1.59	7.7	18 30.8	21 32.7	-10 22.9	-0.0854	0.6022	0.0325	+29	-23
115 Tauri	5.4	+1.66	-8.7	+17 52.6	7 5 19.6	-2 54.4	+0.7396	0.6052	+0.0160	+90	+25
W.B.(2), v. 606	7.0	1.68	8.7	18 17.1	6 09.8	-2 06.3	+0.3447	0.6055	0.0142	+56	+3
119 Tauri	4.6	1.69	8.7	18 31.2	7 17.4	-1 01.4	+0.1239	0.6059	0.0118	+42	-9
120 Tauri	5.3	1.70	8.8	18 28.1	7 48.2	-0 31.8	+0.1805	0.6060	0.0107	+46	-6
B. A. C. 1796	7.5	1.74	9.0	18 56.2	11 17.0	+2 48.7	-0.2627	0.6071	0.0032	+19	-31
127 Tauri	6.3	+1.74	-9.0	+18 55.8	11 26.8	+2 58.1	-0.2555	0.6071	+0.0028	+20	-30
130 Tauri	5.5	1.74	9.6	17 41.4	13 13.9	+4 40.9	+0.9821	0.6076	-0.0011	+90	+42
χ^2 Orionis	5.8	1.79	9.3	19 43.7	16 06.7	+7 26.8	-1.0605	0.6084	0.0074	-32	-70
χ^3 Orionis	5.1	1.82	9.7	19 41.4	19 24.6	+11 36.7	-1.0564	0.6089	0.0146	-32	-70
68 Orionis	5.6	1.85	10.0	19 48.6	22 43.2	-10 12.8	-1.2350	0.6098	0.0219	-54	-70
71 Orionis	5.1	+1.85	-10.3	+19 11.2	23 49.5	-9 09.2	-0.6416	0.6099	-0.0243	-2	-61
20 Geminorum	6.3	1.89	11.3	17 50.7	8 6 34.3	-2 40.8	+0.4760	0.6106	0.0391	+67	+8
21 Geminorum	6.5	1.89	11.3	17 51.0	6 34.5	-2 40.6	+0.4709	0.6106	0.0391	+66	+7
22 Geminorum	7.2	1.92	11.0	19 30.1	7 27.3	-1 50.0	-1.2007	0.6107	0.0410	-48	-70
26 Geminorum	5.0	1.92	11.7	17 44.2	10 28.1	+1 03.5	+0.4135	0.6109	0.0476	+62	+3
W.B.(2) vi. 1630	6.2	+1.97	-12.4	+17 53.4	18 11.0	+8 27.7	-0.1691	0.6108	-0.0641	+26	-31
51 Geminorum	5.4	1.98	13.0	16 19.2	22 25.9	-11 27.7	+1.0902	0.6104	0.0730	+90	+45
7 Geminorum	3.6	1.99	13.1	16 42.7	9 0 15.2	-9 42.9	+0.5667	0.6104	0.0768	+75	+9
W.B.(2) vii. 685	5.6	2.03	13.4	17 17.4	5 33.1	-4 37.7	-0.4387	0.6094	0.0875	+10	-50
68 Geminorum	5.0	2.02	13.7	16 01.9	6 16.3	-3 56.3	+0.7386	0.6093	0.0890	+90	+18
1 Cancri	5.9	+2.05	-14.3	+16 02.7	15 22.6	+4 48.1	-0.1665	0.6072	-0.1065	+25	-34
B. A. C. 2649	6.3	2.06	14.2	16 46.6	15 57.9	+5 22.0	-0.9498	0.6071	0.1076	-22	-73
5 Cancri	6.4	2.06	14.3	16 43.1	17 08.0	+6 29.3	-1.0204	0.6068	0.1098	-27	-73
29 Cancri	5.9	2.07	15.1	14 31.7	10 3 50.7	-7 13.5	-0.1379	0.6032	0.1284	-27	-35
B. A. C. 2872	6.8	2.07	15.3	13 35.1	5 53.6	-5 15.6	+0.5253	0.6025	0.1317	+70	+2
A ¹ Cancri	5.6	+2.08	-15.4	+13 01.5	9 40.0	-1 37.9	+0.5700	0.6010	-0.1376	+74	+3
A ² Cancri	5.8	2.08	15.5	12 27.7	11 10.0	-0 11.5	+0.9176	0.6004	0.1399	+90	+25
60 Cancri	5.7	2.08	15.7	11 59.5	14 46.7	+3 16.8	+0.8662	0.5989	0.1452	+90	+21
α Cancri	4.3	2.08	15.7	12 13.7	15 48.3	+4 16.1	+0.4828	0.5984	0.1466	+66	-2
κ Cancri	5.0	2.07	15.8	11 03.3	19 33.7	+7 52.8	+1.0830	0.5968	0.1518	+90	+36
B. A. C. 3122	7.0	+2.08	-15.8	+11 57.3	20 22.5	+8 39.7	+0.0688	0.5951	-0.1528	+38	-26
ω Leonis	5.6	2.07	15.8	9 28.5	11 4 01.2	-7 59.1	+1.3189	0.5929	0.1622	+90	+70
ξ Leonis	5.2	2.06	15.9	11 43.5	5 26.4	-6 37.2	-1.1410	0.5923	0.1637	-37	-79
δ Leonis	5.4	2.06	15.9	10 08.4	5 27.4	-6 36.2	+0.4269	0.5922	0.1638	+62	-7
σ Leonis	3.8	2.06	15.9	10 19.8	9 15.4	-2 56.8	-0.3913	0.5903	0.1678	+13	-55
B. A. C. 3398	6.0	+2.04	-15.8	+9 23.3	15 37.4	+3 11.1	-0.5464	0.5873	-0.1738	+4	-67
11 Sextantis	6.0	2.04	15.8	8 46.4	16 20.0	+3 52.0	-0.0582	0.5869	0.1744	+31	-35
π Leonis	5.0	2.04	15.7	8 30.3	17 12.8	+4 42.8	+0.0537	0.5865	0.1751	+37	-29
16 Sextantis	7.1	2.04	15.6	6 38.5	21 01.7	+8 23.3	+1.2341	0.5846	0.1782	+90	+48
43 Leonis	6.5	2.01	15.4	7 01.8	12 2 51.7	-9 59.5	-0.2034	0.5817	0.1822	+23	-45
35 Sext. (1 st star)	6.0	+1.99	-15.0	+5 15.1	11 36.1	-1 34.0	-0.0386	0.5775	-0.1867	+32	-36
δ Leonis	5.0	1.96	14.5	4 08.1	19 05.6	+5 39.4	-0.3269	0.5741	0.1893	+16	-54
ρ^3 Leonis	5.7	1.96	14.1	2 28.7	21 53.9	+8 21.8	+0.8085	0.5728	0.1900	+90	+11
B. A. C. 3836	7.2	1.94	14.0	2 47.6	18 0 57.4	+11 18.9	-0.0910	0.5715	0.1905	+29	+39
75 Leonis	5.4	1.94	13.9	2 32.4	2 27.3	-11 14.4	-0.1206	0.5709	0.1907	+28	-41
76 Leonis	6.3	+1.94	-13.8	+2 10.7	3 10.7	-10 32.6	+0.1068	0.5704	-0.1908	+40	-28
79 Leonis	5.5	1.92	13.6	+1 56.2	5 26.9	-8 21.1	-0.0819	0.5695	0.1910	+30	-39
ν Leonis	4.5	1.91	12.8	-0 17.5	11 12.4	-2 47.6	+1.0776	0.5671	0.1910	+90	+30
W. B. xii. 69	7.3	1.83	11.1	2 33.7	14 3 18.1	-11 14.8	+0.3477	0.5612	0.1876	+55	-15
B. A. C. 4134	6.0	1.82	10.7	3 25.1	5 51.4	-8 46.6	+0.7500	0.5603	0.1867	+82	+7
B. A. C. 4135	6.0	+1.82	-10.7	-3 24.8	5 51.6	-8 46.4	+0.7433	0.5603	-0.1867	+83	+7

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

FEBRUARY.

THE STAR'S					AT CONJUNCTION IN R. A.					Limits: Parallels	
Name.	Mag.	Red'ns from 1903.0.		Apparent Declination.	Washington Mean Time.	Hour Angle, <i>H</i>	<i>Y</i>	<i>x'</i>	<i>y'</i>	N.	S.
		$\Delta\alpha$	$\Delta\delta$		d h m	h m					
B. A. C. 4200	5.7	+1.79	-10.1	- 4 04.9	14 10 18.6	- 4 28.4	+0.6060	0.5590	-0.1848	+77	- 1
B. A. C. 4225	6.3	1.79	9.8	4 31.2	12 02.8	- 2 47.7	+0.7392	0.5584	0.1839	+83	+ 7
f Virginis	5.9	1.78	9.4	5 18.0	14 24.9	- 0 30.3	+1.1109	0.5577	0.1827	+85	+33
B. A. C. 4294	6.1	1.75	8.9	5 46.4	19 23.4	+ 4 18.2	+0.7010	0.5563	0.1799	+84	+ 5
h Virginis	5.5	1.61	5.6	9 40.0	15 16 34.8	+ 0 47.7	+1.1232	0.5517	0.1640	+80	+35
m Virginis	5.3	+1.55	- 5.7	- 8 12.9	20 39.8	+ 4 44.8	-1.0668	0.5510	-0.1603	-32	-90
B. A. C. 4391	6.2	1.55	5.1	9 13.5	23 17.9	+ 7 17.7	-0.4221	0.5506	0.1578	+ 8	-61
W. B. xiii, 825	6.8	1.50	4.7	9 05.1	16 3 21.1	+11 13.0	-1.2032	0.5500	0.1538	-46	-90
96 Virginis	6.5	1.45	3.9	9 52.6	9 35.8	- 6 44.5	-1.3091	0.5492	0.1472	-66	-90
λ Virginis	4.6	1.45	2.4	12 55.5	14 21.6	- 2 07.9	+1.2470	0.5487	0.1420	+77	+49
2 Libræ	6.3	+1.41	- 2.7	-11 16.3	16 25.4	- 0 08.1	-0.8074	0.5485	-0.1397	-16	-90
B. A. C. 4772	6.6	1.40	2.7	11 13.8	17 01.5	+ 0 26.8	-0.9353	0.5483	0.1389	-25	-90
B. A. C. 4828	6.0	1.34	1.8	11 53.6	22 54.8	+ 6 08.7	-1.0279	0.5480	0.1321	-32	-90
μ Libræ	5.4	1.31	- 0.7	13 44.7	17 4 42.8	+11 45.6	+0.2119	0.5474	0.1249	+40	-22
α ¹ Libræ	6.0	1.17	+ 1.1	15 11.9	19 48.4	+ 2 22.1	+0.0436	0.5468	0.1052	+28	-32
α ² Libræ	6.3	+1.15	+ 1.2	-14 47.3	20 46.2	+ 3 17.9	-0.5034	0.5468	-0.1041	- 2	-68
ζ ¹ Libræ	6.2	1.14	2.0	16 22.7	23 14.5	+ 5 41.5	+0.9691	0.5467	0.1001	+74	+24
ζ ² Libræ	5.8	1.13	2.0	16 16.6	18 0 23.7	+ 6 48.5	+0.7442	0.5467	0.0989	+74	+ 8
ζ ³ Libræ	5.4	1.12	2.2	16 31.4	1 28.0	+ 7 50.6	+0.9080	0.5465	0.0974	+73	+19
η Libræ	5.5	1.04	2.2	15 21.8	6 48.8	-10 58.8	-0.8546	0.5465	0.0899	-25	-90
θ Libræ	4.3	+1.00	+ 3.1	-16 26.7	11 26.9	- 6 29.6	-0.0786	0.5464	-0.0832	+19	-39
49 Libræ	5.6	0.96	3.1	16 14.8	14 35.9	- 3 26.7	-0.5490	0.5464	0.0786	- 7	-73
χ Ophiuchi	5.0	0.84	4.8	18 14.1	19 3 17.8	+ 8 50.8	+0.7509	0.5463	0.0596	+72	+ 9
24 Scorpii	5.2	0.75	5.0	17 33.2	10 16.3	- 8 24.1	-0.3770	0.5462	0.0489	- 1	-59
29 Ophiuchi	6.5	0.65	6.0	18 44.5	19 57.7	+ 0 58.7	+0.5306	0.5461	0.0339	+52	- 4
B. A. C. 5771	6.2	+0.60	+ 5.7	-17 28.8	23 02.9	+ 3 58.0	-0.9597	0.5460	-0.0291	-38	-90
B. A. C. 5839	6.0	0.53	6.0	17 39.2	20 4 37.9	+ 9 12.2	-0.9063	0.5459	-0.0203	-35	-90
B. A. C. 6060	6.5	0.34	7.0	18 47.0	21 55.3	+ 2 06.5	+0.2274	0.5454	+0.0069	+29	-21
Y Sagittarii	Var.	0.21	7.3	18 54.1	21 10 12.2	+ 9 59.9	+0.5618	0.5448	0.0261	+55	- 2
B. A. C. 6287	6.0	0.17	7.3	18 47.3	14 27.9	- 5 52.4	+0.5618	0.5445	0.0327	+55	- 2
B. A. C. 6292	7.5	+0.16	+ 7.3	-18 58.1	15 00.7	- 5 20.6	+0.7799	0.5445	+0.0335	+71	+11
B. A. C. 6294	5.2	+0.16	7.2	18 28.0	15 04.5	- 5 17.0	+0.2258	0.5445	0.0336	+31	-21
ρ ¹ Sagittarii	3.9	-0.07	7.0	18 01.7	22 15 30.4	- 5 37.4	+1.0099	0.5427	0.0701	+72	+27
ν Sagittarii	4.7	0.07	6.5	16 08.1	15 34.0	- 5 33.9	-1.0839	0.5427	0.0702	-44	-90
ε ¹ Sagittarii	5.6	0.15	6.5	16 30.9	23 0 51.4	+ 3 25.9	+0.0489	0.5418	0.0832	+26	-30
ε ² Sagittarii	5.0	-0.15	+ 6.4	-16 21.0	1 44.5	+ 4 17.4	-0.0588	0.5418	+0.0845	+20	-38
B. A. C. 6746	5.5	0.15	6.2	15 41.6	2 15.4	+ 4 47.4	-0.7429	0.5417	0.0852	-17	-90
ζ Sagittarii	5.0	0.21	6.0	15 44.8	9 20.5	+11 39.2	-0.0444	0.5411	0.0947	+22	-36
B. A. C. 6992	6.2	0.28	5.5	15 05.4	20 37.2	- 1 25.1	+0.3798	0.5400	0.1086	+49	-13
β Capricorni	3.4	0.28	5.5	15 05.2	20 44.2	- 1 18.4	+0.3889	0.5400	0.1094	+50	-13
B. A. C. 7009	7.0	-0.29	+ 5.4	-14 34.0	21 56.0	- 0 07.9	-0.0521	0.5399	+0.1108	+24	-38
B. A. C. 7063	6.2	0.31	5.4	15 22.7	24 1 43.4	+ 3 31.7	+1.2712	0.5395	0.1154	+75	+56
B. A. C. 7087	6.2	0.32	5.1	14 03.2	3 17.2	+ 5 02.5	-0.0083	0.5394	0.1173	+27	-35
B. A. C. 7221	6.3	0.35	4.5	12 54.2	11 30.5	-10 59.3	-0.2724	0.5386	0.1267	+13	-51
B. A. C. 7242	6.5	0.35	4.3	11 56.4	12 43.2	- 9 48.9	-1.1778	0.5386	0.1280	-46	-90
8 Aquarii	6.8	-0.38	+ 4.4	-13 26.3	16 06.1	- 6 32.3	+0.9088	0.5382	+0.1317	+77	+18
NEW MOON.											
MARCH.											
60 Piscium	6.2	-0.13	- 2.4	+ 6 12.6	1 9 23.6	+ 7 16.0	-1.2764	0.5469	+0.1762	-52	-84
B. A. C. 221	5.7	0.14	2.9	4 46.9	9 50.1	+ 7 41.7	+0.3146	0.5473	0.1760	+53	-16
B. A. C. 274	7.0	0.10	2.9	5 57.5	15 21.5	-10 57.5	+0.0347	0.5490	0.1736	+36	-31
ε Piscium	4.5	0.08	2.7	7 22.0	16 50.6	- 9 31.2	-1.1946	0.5495	0.1733	-41	-83
73 Piscium	6.4	0.09	3.3	5 08.1	17 46.2	- 8 37.4	+1.3211	0.5498	0.1725	+90	+63
ζ Piscium	5.4	-0.04	- 3.2	+ 7 03.7	21 57.7	- 4 34.1	+0.0069	0.5513	+0.1702	+34	-32

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

MARCH.

THE STAR'S				AT CONJUNCTION IN R. A.						Limiting Parallels.	
Name.	Mag.	Red'ns from 1903.0.		Apparent Declination.	Washington Mean Time.	Hour Angle. H	Y	x'	y'	N.	S.
		Δα	Δδ		d h m	h m					
88 Piscium	6.1	-0.05	-3.3	+6 28.9	1 22 26.1	-4 06.6	+0.6989	0.5517	+0.1699	+89	+6
B. A. C. 410	7.4	-0.02	3.5	6 54.2	2 2 19.1	-0 21.2	+0.9083	0.5528	0.1675	+90	+20
o Piscium	4.4	+0.08	3.9	8 40.1	12 47.8	+9 46.8	+0.7680	0.5569	0.1598	+90	+12
54 Ceti	5.8	0.12	3.7	10 33.7	15 19.3	-11 46.7	-0.8146	0.5579	0.1577	-12	-79
31 Arietis	5.6	0.33	4.9	12 01.5	3 12 04.3	+8 16.2	+0.7236	0.5669	0.1366	+90	+12
38 Arietis	5.2	+0.36	-5.2	+12 02.2	15 47.1	+11 51.2	+1.2104	0.5686	+0.1321	+90	+50
σ Arietis	5.5	0.42	4.6	14 40.9	18 39.0	-9 22.8	-1.1603	0.5699	0.1285	-40	-75
B. A. C. 1119	6.4	0.66	5.8	16 13.2	4 15 25.4	+10 39.0	-0.3752	0.5795	0.0986	+13	-47
B. A. C. 1206	6.0	0.74	6.0	17 02.2	21 14.5	-7 44.5	-0.6681	0.5820	0.0891	-4	-70
B. A. C. 1272	6.3	0.81	6.5	17 04.7	5 3 29.0	-1 43.7	-0.1874	0.5847	0.0784	+23	-33
W.B.(2),iv, 59	6.4	+0.83	-6.7	+17 01.6	5 22.6	+0 05.6	+0.0121	0.5852	+0.0751	+35	-22
55 Tauri	7.3	0.87	7.2	16 17.2	8 28.0	+3 04.1	+0.9924	0.5867	0.0696	+90	+37
δ ¹ Tauri	4.0	0.89	7.0	17 18.8	9 42.4	+4 15.7	+0.0267	0.5873	0.0674	+36	-20
63 Tauri	5.6	0.89	7.3	16 32.9	9 55.1	+4 27.9	+0.8229	0.5873	0.0671	+90	+26
δ ² Tauri	4.7	0.89	7.1	17 13.0	10 11.4	+4 43.7	+0.1571	0.5874	0.0664	+44	-12
δ ³ Tauri	4.2	+0.91	-6.9	+17 42.3	10 45.6	+5 16.6	-0.3032	0.5876	+0.0654	+17	-39
B. A. C. 1468	6.5	1.02	7.4	18 33.5	19 19.3	-10 29.0	-0.6811	0.5908	0.0494	-4	-67
i Tauri	5.1	1.05	7.6	18 40.4	21 24.4	-8 28.7	-0.6991	0.5915	0.0454	-6	-69
B. A. C. 1526	5.8	1.06	8.3	16 59.9	23 53.5	-6 05.3	+1.1125	0.5923	0.0406	+90	+50
m Tauri	5.1	1.13	8.2	18 30.8	6 3 56.8	-2 11.3	-0.2800	0.5936	0.0326	+18	-34
111 Tauri	5.2	+1.20	-9.2	+17 17.5	10 51.5	+4 27.5	+1.1380	0.5955	+0.0187	+90	+54
115 Tauri	5.4	1.21	9.1	17 52.6	11 58.1	+5 31.6	+0.5629	0.5957	0.0165	+75	+14
W.B.(2),v, 606	7.0	1.23	9.0	18 17.1	12 49.9	+6 21.3	+0.1627	0.5959	0.0148	+44	-8
119 Tauri	4.6	1.24	9.0	18 31.2	13 59.6	+7 28.4	-0.0601	0.5962	0.0124	+31	-20
120 Tauri	5.3	1.25	9.1	18 28.1	14 31.5	+7 59.0	-0.0022	0.5963	0.0113	+34	-16
B. A. C. 1796	7.5	+1.30	-9.2	+18 56.2	18 07.1	+11 26.3	-0.4489	0.5971	+0.0039	+9	-43
127 Tauri	6.3	1.30	9.2	18 55.8	18 17.2	+11 36.0	-0.4415	0.5971	+0.0036	+9	-43
130 Tauri	5.5	1.31	9.8	17 41.4	20 07.9	-10 37.6	+0.8167	0.5975	-0.0002	+90	+31
γ ² Orionis	5.8	1.36	9.4	19 43.7	23 06.6	-7 45.8	-1.2544	0.5980	0.0063	-59	-70
γ ³ Orionis	5.1	1.40	9.7	19 41.4	7 2 31.3	-4 29.0	-1.2480	0.5985	0.0134	-58	-70
71 Orionis	5.1	+1.45	-10.2	+19 11.2	7 05.5	-0 05.5	-0.8216	0.5990	-0.0228	-14	-71
20 Geminorum	6.3	1.51	11.2	17 50.7	14 04.8	+6 37.4	+0.3218	0.5995	0.0372	+54	-1
21 Geminorum	6.5	1.51	11.2	17 51.0	14 05.2	+6 37.8	+0.3165	0.5995	0.0373	+54	-1
26 Geminorum	5.0	1.55	11.6	17 44.2	18 07.3	+10 30.5	+0.2628	0.5996	0.0455	+50	-5
W.B.(2),vi,1630	6.2	1.64	12.1	17 53.4	8 2 07.1	-5 48.5	-0.3194	0.5994	0.0616	+16	-39
51 Geminorum	5.4	+1.67	-12.9	+16 19.2	6 31.3	-1 34.5	+0.9667	0.5991	-0.0709	+90	+35
γ Geminorum	3.6	1.69	12.9	16 42.7	8 24.6	+0 14.4	+0.4368	0.5988	0.0740	+63	+2
W.B.(2),vii,685	5.6	1.75	13.1	17 17.4	13 54.1	+5 31.1	-0.5776	0.5983	0.0849	+2	-60
68 Geminorum	5.0	1.74	13.5	16 01.9	14 38.8	+6 14.0	+0.6201	0.5981	0.0859	+80	+11
i Cancri	5.9	1.82	14.0	16 02.7	9 0 04.4	-8 42.3	-0.2856	0.5966	0.1031	+18	-41
B. A. C. 2649	6.3	+1.83	-13.8	+16 46.6	0 41.0	-8 07.1	-1.0807	0.5965	-0.1041	-33	-73
5 Cancri	6.4	1.84	13.9	16 43.1	1 53.4	-6 57.5	-1.1502	0.5962	0.1063	-40	-73
29 Cancri	5.9	1.91	15.0	14 31.7	12 57.4	+3 41.1	-0.2359	0.5936	0.1247	+21	-40
B. A. C. 2872	6.8	1.93	15.3	13 35.1	15 04.2	+5 43.1	+0.4404	0.5930	0.1280	+63	+32
A ¹ Cancri	5.6	1.95	15.5	13 01.5	18 57.6	+9 27.6	+0.4920	0.5919	0.1338	+67	-1
A ² Cancri	5.8	+1.96	-15.7	+12 27.7	20 30.2	+10 56.8	+0.8471	0.5915	-0.1361	+90	+20
60 Cancri	5.7	1.98	15.9	11 59.5	10 13.3	-9 28.6	+0.8009	0.5904	0.1414	+90	+16
α Cancri	4.3	1.98	15.9	12 13.7	1 16.6	-8 27.6	+0.4142	0.5901	0.1428	+60	-6
κ Cancri	5.0	2.00	16.2	11 03.3	5 08.2	-4 44.7	+1.0283	0.5888	0.1479	+90	+32
B. A. C. 3122	7.0	2.01	16.0	11 57.3	5 58.3	-3 56.4	+0.0028	0.5886	0.1490	+34	-29
ω Leonis	5.6	+2.05	-16.5	+9 28.5	13 48.6	+3 36.4	+1.2827	0.5867	-0.1586	+90	+59
ξ Leonis	5.2	2.06	16.1	11 43.5	15 15.7	+5 00.2	-1.2052	0.5861	0.1602	-44	-78
η Leonis	5.4	2.06	16.4	10 08.3	15 16.7	+5 01.2	-0.3822	0.5861	0.1602	+58	-10
ο Leonis	3.8	2.07	16.4	10 19.8	19 09.7	+8 45.6	-0.4383	0.5843	0.1642	+10	-58
B. A. C. 3398	6.0	2.10	16.5	9 23.3	11 1 39.5	-8 58.8	-0.5828	0.5821	0.1704	+3	-70
11 Sextantis	6.0	+2.10	-16.5	+8 46.3	2 22.9	-8 17.0	-0.0885	0.5819	-0.1711	+29	-37

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

MARCH.

THE STAR'S				AT CONJUNCTION IN R. A.						Limiting Parallels.	
Name.	Mag.	Red'ns from 1903.0.		Apparent Declination.	Washington Mean Time.	Hour Angle, <i>H</i>	<i>Y</i>	<i>x'</i>	<i>y'</i>	N.	S.
		$\Delta\alpha$	$\Delta\delta$								
		s	"	° ' "	d h m	h m				° ' "	° ' "
π Leonis	5.0	+2.10	-16.6	+ 8 30.3	11 3 16.6	- 7 25.3	+0.0263	0.5816	-0.1718	+36	-30
16 Sextantis	7.1	2.12	16.7	6 38.5	7 09.5	- 3 40.8	+1.2242	0.5803	0.1750	+90	+47
43 Leonis	6.5	2.14	16.6	7 01.8	13 04.8	+ 2 01.6	-0.2148	0.5783	0.1792	+22	-45
35 Sext. (1 st star)	6.0	2.16	16.4	5 15.1	21 55.3	+10 33.3	-0.0321	0.5754	0.1842	+32	-35
<i>d</i> Leonis	5.0	2.18	16.1	4 08.0	12 5 28.4	- 6 09.6	- 3078	0.5731	0.1872	+17	-52
ρ^3 Leonis	5.7	+2.18	-16.1	+ 2 28.7	8 17.6	- 3 26.3	+0.8376	0.5722	-0.1879	+90	+13
B. A. C. 3836	7.2	2.19	15.9	2 47.6	11 21.9	- 0 28.4	-0.0599	0.5726	0.1887	+31	-37
75 Leonis	5.4	2.19	15.8	2 32.4	12 52.1	+ 0 58.6	-0.0869	0.5709	0.1890	+29	-39
76 Leonis	6.3	2.19	15.8	2 10.7	13 35.6	+ 1 40.5	+0.1426	0.5707	0.1891	+42	-26
79 Leonis	5.5	2.19	15.7	+ 1 56.1	15 52.1	+ 3 52.3	-0.0426	0.5700	0.1894	+32	-37
ν Leonis	4.5	+2.21	-15.3	- 0 17.5	21 37.8	+ 9 26.1	+1.1288	0.5685	-0.1897	+90	+35
W. B. xii, 69	7.3	2.22	13.9	2 33.8	13 39.5	+ 0 54.7	+0.4231	0.5645	0.1872	+61	-11
B. A. C. 4134	6.0	2.22	13.6	3 25.2	16 11.5	+ 3 21.6	+0.8287	0.5640	0.1864	+87	+12
B. A. C. 4135	6.0	2.22	13.6	3 24.9	16 11.7	+ 3 21.8	+0.8227	0.5640	0.1864	+87	+12
B. A. C. 4200	5.7	2.22	13.1	4 04.9	20 30.3	+ 7 37.4	+0.6913	0.5631	0.1847	+84	+ 4
B. A. C. 4225	6.3	+2.22	-12.9	- 4 31.3	22 19.5	+ 9 17.1	+0.8265	0.5628	-0.1839	+85	+12
<i>f</i> Virginis	5.9	2.22	12.6	5 18.1	14 0 40.0	+11 32.9	+1.2003	0.5623	0.1828	+85	+42
B. A. C. 4294	6.1	2.21	12.1	5 46.4	5 35.0	- 7 42.1	+0.7980	0.5614	0.1802	+84	+11
<i>h</i> Virginis	5.5	2.18	9.2	9 40.1	15 2 26.8	-11 32.2	+1.2413	0.5583	0.1649	+80	+48
<i>m</i> Virginis	5.3	2.14	8.8	8 13.0	6 27.3	- 7 39.7	-0.9299	0.5578	0.1612	-22	-90
B. A. C. 4591	6.2	+2.15	- 8.5	- 9 13.6	9 02.4	- 5 09.7	-0.2867	0.5575	-0.1591	+16	-51
W. B. xiii, 825	6.8	2.12	8.0	9 05.2	13 00.9	- 1 19.2	-1.0580	0.5570	0.1548	-32	-90
96 Virginis	6.5	2.10	7.2	9 52.6	19 08.2	+ 4 35.9	-1.1574	0.5564	0.1483	-42	-90
2 Libræ	6.3	2.07	6.0	11 16.4	16 1 49.5	+11 04.0	-0.6536	0.5558	0.1408	- 7	-83
B. A. C. 4772	6.6	2.07	6.0	11 13.9	2 24.8	+11 38.1	-0.7803	0.5557	0.1401	-14	-90
B. A. C. 4828	6.0	+2.03	- 5.0	-11 53.7	8 10.7	- 6 47.5	-0.8674	0.5552	-0.1332	-21	-90
μ Libræ	5.4	2.02	3.9	13 44.8	13 51.5	- 1 17.8	+0.3654	0.5549	0.1260	+50	-14
α^1 Libræ	6.0	1.92	1.7	15 12.0	17 4 38.4	-11 00.0	+0.2048	0.5536	0.1061	+37	-23
α^2 Libræ	6.3	1.91	1.7	14 47.3	5 35.1	-10 05.2	-0.3364	0.5535	0.1048	+ 7	-55
ζ^1 Libræ	6.2	1.91	1.0	16 22.7	8 00.4	- 7 44.7	+1.1247	0.5534	0.1014	+74	+37
ζ^3 Libræ	5.8	+1.90	- 0.9	-16 16.6	9 08.4	- 6 38.9	+0.9017	0.5533	-0.0998	+74	+19
ζ^4 Libræ	5.4	1.89	0.7	16 31.5	10 11.3	- 5 38.1	+1.0647	0.5532	0.0983	+73	+32
γ Libræ	4.0	1.85	1.2	14 28.0	11 26.3	- 4 25.5	-1.2745	0.5531	0.0965	-65	-90
η Libræ	5.5	1.82	- 0.4	15 22.0	15 26.0	- 0 33.7	-0.6817	0.5528	0.0906	-14	-89
θ Libræ	4.3	1.81	+ 0.5	16 26.7	19 59.0	+ 3 50.4	+0.0888	0.5525	0.0839	+28	-29
49 Libræ	5.6	+1.76	+ 0.7	-16 14.9	23 04.6	+ 6 49.9	-0.3775	0.5522	-0.0793	+ 2	-58
χ Ophiuchi	5.0	1.66	2.7	18 14.2	18 11 33.9	- 5 05.3	+0.9137	0.5512	0.0602	+72	+20
ϕ Ophiuchi	4.4	1.64	2.3	16 24.0	13 32.3	- 3 10.8	-1.2027	0.5510	0.0571	-57	-90
24 Scorpii	5.2	1.58	3.2	17 33.2	18 26.3	+ 1 33.6	-0.2064	0.5507	0.0494	+ 9	-47
29 Ophiuchi	6.5	1.48	4.5	18 44.5	19 4 00.2	+10 49.0	+0.6943	0.5496	0.0343	+68	+ 6
B. A. C. 5771	6.2	+1.43	+ 4.3	-17 28.8	7 03.3	-10 13.8	-0.7872	0.5494	-0.0294	-27	-90
B. A. C. 5839	6.0	1.37	4.8	17 39.2	12 34.7	- 4 53.2	-0.7359	0.5487	-0.0207	-24	-90
B. A. C. 6060	6.5	1.17	6.5	18 47.0	20 5 44.1	+11 53.0	+0.3861	0.5467	+0.0065	+39	-12
Y Sagittarii	1 st ar.	1.02	7.2	18 54.1	17 57.7	- 0 26.9	+0.7140	0.5451	0.0256	+70	+ 7
B. A. C. 6287	6.0	0.97	7.4	18 47.3	22 12.8	+ 3 40.1	+0.7117	0.5445	0.0321	+70	+ 7
B. A. C. 6292	7.5	+0.96	+ 7.4	-18 58.1	22 45.5	+ 4 11.8	+0.9290	0.5444	+0.0330	+71	+22
B. A. C. 6294	5.2	0.96	7.3	18 28.0	22 49.3	+ 4 15.4	+0.3767	0.5444	0.0331	+41	-13
ρ^1 Sagittarii	3.9	0.67	7.9	18 01.7	21 23 15.1	+ 3 55.0	+1.1438	0.5409	0.0692	+72	+40
ν Sagittarii	4.7	0.66	7.2	16 08.1	23 18.8	+ 3 58.6	-0.9452	0.5409	0.0692	-33	-90
ϵ^1 Sagittarii	5.6	0.56	7.5	16 30.8	22 8 37.4	-11 00.3	+0.1780	0.5400	0.0822	+35	-24
ϵ^2 Sagittarii	5.0	+0.55	+ 7.4	-16 21.0	9 30.6	-10 07.7	-0.0696	0.5399	+0.0834	+28	-30
B. A. C. 6746	5.5	0.54	7.2	15 41.7	10 01.7	- 9 38.6	-0.6139	0.5398	0.0841	-10	-78
σ Sagittarii	5.0	0.46	7.2	15 44.8	17 08.0	- 2 45.6	+0.0778	0.5390	0.0935	+29	-30
B. A. C. 6992	6.2	0.35	6.9	15 05.4	23 4 27.2	+ 7 12.6	+0.4913	0.5379	0.1079	+57	- 7
β Capricorni	3.4	0.34	6.9	15 05.2	4 34.2	+ 7 19.4	+0.5005	0.5378	0.1080	+58	- 6
B. A. C. 7009	7.0	+0.33	+ 6.8	-14 34.0	5 47.2	+ 8 30.1	+0.0591	0.5377	+0.1095	+30	-30

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

MARCH.

THE STAR'S					AT CONJUNCTION IN R. A.					Limiting Parallels	
Name.	Mag.	Red'ns from 1903.0.		Apparent Declination.	Washington Mean Time.	Hour Angle, <i>H</i>	<i>Y</i>	<i>x'</i>	<i>y'</i>	<i>N.</i>	<i>S</i>
		$\Delta\alpha$	$\Delta\delta$								
		<i>s</i>	<i>"</i>	<i>°</i>	<i>d</i> <i>h</i> <i>m</i>	<i>h</i> <i>m</i>				<i>°</i>	<i>°</i>
B. A. C. 7087	6.2	+0.28	+ 6.5	-14 03.2	23 11 08.6	-10 18.4	+0.0979	0.5372	+0.1159	+33	-29
B. A. C. 7221	6.3	0.21	6.0	12 54.2	19 23.5	- 2 18.7	-0.1740	0.5366	0.1252	+19	-45
B. A. C. 7242	6.5	0.20	5.7	11 56.4	20 36.4	- 1 08.0	-1.0799	0.5365	0.1268	-36	-90
8 Aquarii	6.8	0.16	6.0	13 26.2	24 0 00.1	+ 2 09.5	+1.0016	0.5364	0.1302	+77	+25
ν Aquarii	4.6	0.13	5.4	11 45.8	4 51.8	+ 7 52.3	-0.1906	0.5361	0.1353	+20	-46
19 Aquarii	5.7	+0.07	+ 4.7	-10 09.6	12 43.2	- 8 30.7	-0.8509	0.5360	+0.1430	-18	-90
ϵ^1 Capricorni	5.2	0.00	4.2	9 31.6	22 39.5	+ 1 07.4	-0.0753	0.5360	0.1519	+28	-38
ϵ^2 Capricorni	6.2	-0.01	4.2	9 43.4	23 17.6	+ 1 44.3	+0.2346	0.5360	0.1524	+45	-21
36 Aquarii	6.3	0.08	3.4	8 39.7	25 10 56.1	-10 58.5	+0.9063	0.5364	0.1614	+81	+18
B. A. C. 7717	6.5	0.07	3.2	8 00.7	10 58.0	-10 56.7	+0.2059	0.5364	0.1614	+44	-22
θ Aquarii	4.3	-0.09	+ 3.1	- 8 15.9	14 38.4	- 7 23.0	+1.0780	0.5366	+0.1640	+82	+31
B. A. C. 7793	7.5	0.10	2.7	6 43.8	16 56.8	- 6 08.8	-0.2052	0.5368	0.1654	+21	-46
B. A. C. 7804	6.1	0.11	2.8	7 41.0	18 00.8	- 4 06.8	+1.0030	0.5369	0.1661	+82	+25
W. B. xxii, 493	6.2	0.13	2.4	7 02.9	21 53.7	- 0 21.0	+0.9648	0.5373	0.1685	+83	+22
κ Aquarii	5.5	0.13	1.9	4 43.7	26 1 09.2	- 2 48.6	-0.9897	0.5376	0.1703	-24	-90
B.A.C. 7951(mean)	6.7	-0.16	+ 1.5	- 4 43.9	6 11.5	- 7 41.6	-0.1197	0.5382	+0.1729	+27	-41
NEW MOON.											
31 Arietis	5.6	+0.04	- 5.9	+12 01.5	30 18 10.6	- 7 50.1	+0.6560	0.5736	+0.1377	+83	+ 8
38 Arietis	5.2	0.06	6.2	12 02.2	21 49.2	- 4 19.3	+1.1374	0.5753	0.1331	+90	+43
σ Arietis	5.5	+0.10	- 5.9	+14 40.8	31 0 38.0	- 1 36.4	-1.2174	0.5764	+0.1294	-47	-75
B. A. C. 1119	6.4	+0.26	- 7.0	+16 13.2	21 04.4	- 5 54.4	-0.4463	0.5848	+0.0991	+ 9	-52

APRIL.

B. A. C. 1206	6.0	+0.32	- 7.2	+17 02.2	1 2 48.9	- 0 22.7	-0.7396	0.5868	+0.0895	- 8	-73
B. A. C. 1272	6.3	0.37	7.6	17 04.7	8 59.2	+ 5 33.8	-0.2627	0.5888	0.0788	+19	-38
W.B.(2), iv, 59	6.4	0.38	7.7	17 01.6	10 51.6	+ 7 21.9	-0.0642	0.5894	0.0754	+30	-26
55 Tauri	7.3	0.41	8.1	16 17.2	13 55.4	+10 18.8	+0.9125	0.5903	0.0698	+90	+31
δ^1 Tauri	4.0	0.43	7.9	17 18.8	15 09.2	+11 29.9	-0.0503	0.5907	0.0676	+31	-24
63 Tauri	5.6	+0.43	- 8.2	+16 32.9	15 21.8	+11 41.9	+0.7436	0.5908	+0.0672	+90	+20
δ^2 Tauri	4.7	0.43	8.0	17 13.0	15 37.9	+11 57.5	+0.0795	0.5908	0.0667	+39	-17
δ^3 Tauri	4.2	0.44	7.9	17 42.2	16 11.8	-11 29.9	-0.3796	0.5910	0.0656	+13	-44
B. A. C. 1468	6.5	0.53	8.2	18 33.5	2 0 42.3	- 3 18.7	-0.7583	0.5931	0.0495	-11	-71
i Tauri	5.1	0.55	8.3	18 40.4	2 46.9	- 1 18.8	-0.7765	0.5936	0.0455	-11	-71
B. A. C. 1526	5.8	+0.57	- 9.0	+16 59.9	5 15.4	+ 1 04.0	+1.0335	0.5941	+0.0406	+90	+43
m Tauri	5.1	0.63	8.8	18 30.8	9 18.1	+ 4 57.4	-0.3585	0.5947	0.0327	+14	-40
111 Tauri	5.2	0.69	9.6	17 17.5	16 12.8	+11 36.2	+1.0608	0.5957	0.0188	+90	+47
115 Tauri	5.4	0.70	9.5	17 52.6	17 19.5	-11 19.7	+0.4853	0.5958	0.0165	+67	+10
117 Tauri	6.3	0.70	9.8	17 09.3	17 41.0	-10 59.0	+1.2235	0.5958	0.0158	+90	+64
W. B.(2) v, 606	7.0	+0.71	- 9.4	+18 17.1	18 11.3	-10 29.9	+0.0846	0.5959	+0.0145	+39	-12
119 Tauri	4.6	0.73	9.4	18 31.2	19 21.3	- 9 22.5	-0.1385	0.5960	0.0124	+26	-24
120 Tauri	5.3	0.73	9.4	18 28.1	19 53.2	- 8 51.9	-0.0805	0.5960	0.0113	+29	-21
B. A. C. 1796	7.5	0.78	9.5	18 56.2	23 29.6	- 5 23.8	-0.5280	0.5963	0.0043	+ 4	-50
127 Tauri	6.3	0.78	9.5	18 55.8	23 39.7	- 5 14.1	-0.5206	0.5963	+0.0037	+ 5	-49
130 Tauri	5.5	+0.79	-10.1	+17 41.4	3 1 30.9	- 3 27.3	+0.7409	0.5964	0.0000	+90	+27
71 Orionis	5.1	0.92	10.2	19 11.2	12 33.3	+ 7 09.6	-0.9020	0.5964	-0.0226	-20	-71
20 Geminorum	6.3	1.00	11.1	17 50.7	19 37.1	-10 03.0	+0.2483	0.5959	0.0368	+49	- 5
21 Geminorum	6.5	1.00	11.1	17 51.0	19 37.4	-10 02.7	+0.2431	0.5958	0.0368	+49	- 5
26 Geminorum	5.0	1.05	11.4	17 44.2	23 42.7	- 6 06.8	+0.1901	0.5954	0.0449	+46	- 8
W. B.(2), vi, 1630	6.2	+1.14	-11.7	+17 53.4	4 7 49.9	+ 1 41.8	-0.3943	0.5942	-0.0608	+12	-44
51 Geminorum	5.4	1.18	12.4	16 19.2	12 18.8	+ 6 00.4	+0.9034	0.5934	0.0693	+90	+30
λ Geminorum	3.6	1.20	12.4	16 42.7	14 14.2	+ 7 51.4	+0.3699	0.5928	0.0729	+58	- 1
W. B.(2) vii, 685	5.6	1.27	12.4	17 17.4	19 50.1	-10 45.4	-0.6518	0.5918	0.0832	- 3	-67
68 Geminorum	5.0	1.27	12.9	16 01.9	20 35.9	-10 01.4	+0.5573	0.5916	0.0846	+73	+ 8
1 Cancri	5.9	+1.38	-13.2	+16 02.7	5 6 14.2	- 0 45.0	-0.3540	0.5891	-0.1014	+14	-46

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

APRIL.

THE STAR'S				AT CONJUNCTION IN R. A.					Limiting Parallels	
Name.	Mag.	Red'ns from 1903.0.		Apparent Declination.	Washington Mean Time.	Hour Angle, <i>H</i>	<i>Y</i>	<i>x'</i>	<i>y'</i>	N. S
		$\Delta\alpha$	$\Delta\delta$							
		s	"	° ' "	d h m	h m				
B. A. C. 2649	6.3	+1.39	-13.0	+16 46.6	5 6 51.6	- 0 09.0	-1.1571	0.5889	-0.1024	-41 -73
5 Cancr	6.4	1.40	13.1	16 43.2	8 05.8	+ 1 02.4	-1.2273	0.5886	0.1045	-50 -73
29 Cancr	5.9	1.51	14.1	14 31.7	19 26.8	+11 58.1	-0.2088	0.5851	0.1224	+17 -44
B. A. C. 2872	6.8	1.53	14.5	13 35.1	21 37.0	- 9 56.5	+0.3866	0.5845	0.1256	+59 - 6
A ¹ Cancr	5.6	1.57	14.7	13 01.5	6 1 36.7	- 6 05.7	+0.4409	0.5832	0.1314	+63 - 4
A ² Cancr	5.8	+1.58	-14.9	+12 27.7	3 11.9	- 4 34.0	+0.8012	0.5827	-0.1336	+90 +17
60 Cancr	5.7	1.62	15.1	11 59.6	7 01.2	- 0 53.2	+0.7565	0.5815	0.1387	+90 +14
a Cancr	4.3	1.63	15.1	12 13.8	8 06.4	+ 0 09.7	+0.3652	0.5811	0.1401	+57 - 9
κ Cancr	5.0	1.67	15.4	11 03.3	12 04.6	+ 3 59.3	+0.9898	0.5798	0.1451	+90 +29
B. A. C. 3122	7.0	1.68	15.2	11 57.3	12 56.2	+ 4 49.0	-0.0491	0.5796	0.1462	+31 -42
ω Leonis	5.6	+1.75	-15.9	+ 9 28.5	21 00.1	-11 24.6	+1.2503	0.5768	-0.1554	+90 +53
ξ Leonis	5.2	1.77	15.3	11 43.5	22 29.8	- 9 58.0	-1.2669	0.5765	0.1570	-53 -78
λ Leonis	5.4	1.77	15.7	10 08.4	22 30.9	- 9 57.0	+0.3398	0.5765	0.1570	+55 -12
o Leonis	3.8	1.80	15.6	10 19.8	7 2 30.7	- 6 05.7	-0.4891	0.5752	0.1611	+ 7 -62
B. A. C. 3398	6.0	1.86	15.8	9 23.3	9 11.8	+ 0 21.2	-0.6317	0.5732	0.1672	- 1 -75
11 Sextantis	6.0	+1.86	-15.9	+ 8 46.4	9 56.5	+ 1 04.3	-0.1306	0.5729	-0.1678	+27 -39
π Leonis	5.0	1.87	16.0	8 30.3	10 51.8	+ 1 57.7	-0.0139	0.5726	0.1686	+33 -33
16 Sextantis	7.1	1.91	16.4	6 38.5	14 51.3	+ 5 48.7	+1.2019	0.5715	0.1718	+90 +44
43 Leonis	6.5	1.96	16.1	7 01.8	20 56.7	+11 41.3	-0.2525	0.5698	0.1760	+20 -48
35 Sext. (1 st star)	6.0	2.03	16.2	5 15.1	8 6 01.5	- 3 32.7	-0.0622	0.5677	0.1812	+31 -37
d Leonis	5.0	+2.09	-16.1	+ 4 08.0	13 46.3	+ 3 56.1	-0.3369	0.5657	-0.1842	+16 -54
ρ Leonis	5.7	2.11	16.3	2 28.6	16 39.7	+ 6 43.5	+0.8231	0.5651	0.1851	+90 +12
B. A. C. 3836	7.2	2.13	16.0	2 47.6	19 48.4	+ 9 45.9	-0.0830	0.5644	0.1859	+29 -39
75 Leonis	5.4	2.14	16.0	2 32.4	21 20.6	+11 14.9	-0.1091	0.5641	0.1862	+28 -40
76 Leonis	6.3	2.15	16.0	2 10.7	22 05.1	+11 57.8	-0.1233	0.5640	0.1863	+41 -27
79 Leonis	5.5	+2.16	-15.9	+ 1 56.1	9 0 24.8	- 9 47.1	-0.0631	0.5633	-0.1867	+31 -38
v Leonis	4.5	2.21	15.8	- 0 17.6	6 17.8	- 4 06.1	+1.1234	0.5626	0.1872	+90 +34
W. B. xii, 69	7.3	2.31	14.8	2 33.8	22 37.0	+11 40.2	+0.4183	0.5604	0.1853	+60 -11
B. A. C. 4134	6.0	2.33	14.6	3 25.2	10 1 11.4	- 9 50.6	+0.8279	0.5601	0.1846	+87 -12
B. A. C. 4135	6.0	2.33	14.6	3 24.9	1 11.5	- 9 50.5	+0.8221	0.5601	0.1846	+87 +12
B. A. C. 4200	5.7	+2.36	-14.3	- 4 05.0	5 39.8	- 5 31.2	+0.6914	0.5597	-0.1831	+84 + 4
B. A. C. 4225	6.3	2.37	14.1	4 31.3	7 24.3	- 3 50.2	+0.8282	0.5596	0.1824	+85 +12
f Virginis	5.9	2.38	13.9	5 18.1	9 46.6	- 1 32.6	+1.2051	0.5594	0.1814	+85 +42
B. A. C. 4294	6.1	2.40	13.4	5 46.5	14 44.8	+ 3 15.6	+0.8019	0.5591	0.1790	+84 +11
h Virginis	5.5	2.49	11.0	9 40.1	11 11 44.7	- 0 26.4	+1.2529	0.5583	0.1646	+80 +49
m Virginis	5.3	+2.47	-10.5	- 8 13.0	15 45.9	+ 3 26.8	-0.9235	0.5582	-0.1611	-22 -90
B. A. C. 4591	6.2	2.49	10.1	9 13.6	18 21.2	+ 5 57.0	-0.2777	0.5582	0.1586	+16 -51
W. B. xiii, 825	6.8	2.49	9.6	9 05.2	22 19.8	+ 9 47.7	-1.0490	0.5581	0.1548	-32 -90
96 Virginis	6.5	2.50	8.8	9 52.7	12 4 26.7	- 8 17.6	-1.1461	0.5581	0.1485	-41 -90
2 Libræ	6.3	2.51	7.8	11 16.4	11 06.8	- 1 50.7	-0.6397	0.5581	0.1411	- 6 -81
B. A. C. 4772	6.6	+2.51	- 7.7	-11 13.9	11 41.9	- 1 16.8	-0.7661	0.5581	-0.1404	-14 -90
B. A. C. 4828	6.0	2.49	6.7	11 53.7	17 26.2	+ 4 16.1	-0.8516	0.5581	0.1336	-20 -90
μ Libræ	5.4	2.53	5.8	13 44.8	23 04.8	+ 9 43.5	+0.3816	0.5580	0.1265	+51 -13
o ¹ Libræ	6.0	2.50	3.4	15 12.0	13 44.6	- 0 05.9	+0.2227	0.5576	0.1068	+39 -22
o ² Libræ	6.3	2.49	3.4	14 47.3	14 40.8	+ 0 48.3	-0.3171	0.5576	0.1055	+ 8 -54
ζ Libræ	6.2	+2.51	- 2.8	-16 22.8	17 04.7	+ 3 07.5	+1.1404	0.5576	-0.1021	+74 +40
ζ Libræ	5.8	2.50	2.6	16 16.7	18 11.9	+ 4 12.5	+0.9184	0.5575	0.1005	+74 +20
ζ Libræ	5.4	2.50	2.4	16 31.5	19 14.2	+ 5 12.7	+1.0809	0.5575	0.0989	+73 +33
γ Libræ	4.0	2.46	2.6	14 28.0	20 28.4	+ 7 24.5	-1.2517	0.5574	0.0971	-61 -90
η Libræ	5.5	2.45	1.9	15 21.9	14 0 25.6	+10 13.8	-0.6603	0.5572	0.0913	-13 -85
θ Libræ	4.3	+2.45	- 1.0	-16 26.7	4 55.6	- 9 25.1	+0.1081	0.5570	-0.0846	+30 -28
49 Libræ	5.6	2.41	- 0.7	16 14.9	7 59.0	- 6 27.8	-0.3564	0.5568	0.0803	+ 3 -57
χ Ophiuchi	5.0	2.37	+ 1.6	18 14.2	20 19.6	+ 5 28.3	+0.9301	0.5558	0.0607	+72 +21
ϕ Ophiuchi	4.4	2.36	1.4	16 24.1	22 16.6	+ 7 31.5	-1.1785	0.5556	0.0576	-55 -90
24 Scorpii	5.2	2.30	2.3	17 33.2	15 3 07.1	-11 57.7	-0.1859	0.5551	0.0499	+10 -46
29 Ophiuchi	6.5	+2.24	+ 3.8	-18 44.5	12 34.5	- 2 48.9	+0.7106	0.5539	-0.0346	+70 + 7

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

APRIL.

THE STAR'S				AT CONJUNCTION IN R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1903.0.	Apparent Declination.	Washington Mean Time.	Hour Angle, <i>H</i>	<i>Y</i>	<i>x'</i>	<i>y'</i>	N.	S.
		$\Delta\alpha$	$\Delta\delta$							
		α	δ	α	δ				α	δ
B. A. C. 5771	6.2	+2.19	+ 3.9	-17 28.8	15 15 35.5	+ 0 06.2	-0.7659	0.5535	-0.0297	-25 -90
B. A. C. 5839	6.0	2.14	4.6	17 39.2	21 03.2	+ 5 23.1	-0.7151	0.5526	-0.0209	-23 -90
B. A. C. 6060	6.5	1.98	6.8	18 47.0	16 14 02.6	- 2 10.6	+0.4013	0.5498	+0.0064	+40 -11
Y Sagittarii	Var	1.85	7.9	18 54.1	17 2 10.8	+ 9 34.1	+0.7269	0.5474	0.0256	+71 + 8
B. A. C. 6287	6.0	1.80	8.3	18 47.3	6 24.3	-10 20.5	+0.7240	0.5465	0.0321	+71 + 8
B. A. C. 6292	7.5	+1.79	+ 8.3	-18 58.1	6 56.9	- 9 49.1	+0.9411	0.5464	+0.0329	+71 +33
B. A. C. 6294	5.2	1.79	8.2	18 28.0	7 00.6	- 9 45.4	+0.3897	0.5464	0.0330	+42 -12
ρ^1 Sagittarii	3.9	1.48	9.6	18 01.6	18 7 22.0	-10 10.4	+1.1533	0.5412	0.0690	+72 +42
ν Sagittarii	4.7	1.47	9.0	16 08.1	7 25.6	-10 06.9	-0.9362	0.5412	0.0691	-32 -90
ϵ^1 Sagittarii	5.6	1.36	9.5	16 30.8	16 44.5	- 1 05.5	+0.1857	0.5393	0.0819	+34 -24
ϵ^2 Sagittarii	5.0	+1.35	+ 9.5	-16 20.9	17 37.8	- 0 13.8	+0.0772	0.5391	+0.0831	+28 -30
B. A. C. 6746	5.5	1.34	9.3	15 41.5	18 08.9	+ 0 16.4	-0.6066	0.5390	0.0838	-10 -79
γ Sagittarii	5.0	1.25	9.5	15 44.8	19 1 16.3	+ 7 10.5	-0.0840	0.5377	0.0931	+29 -29
B. A. C. 6992	6.2	1.12	9.5	15 05.3	12 38.2	- 5 48.5	+0.4960	0.5358	0.1074	+58 - 6
β Capricorni	3.4	1.11	9.5	15 05.1	12 45.2	- 5 41.8	+0.5052	0.5358	0.1074	+58 - 6
B. A. C. 7009	7.0	+1.10	+ 9.4	-14 33.9	13 58.5	- 4 30.7	+0.0628	0.5355	+0.1089	+30 -31
B. A. C. 7087	6.2	1.03	9.2	14 31.0	19 21.8	+ 0 42.7	+0.1008	0.5348	0.1152	+33 -28
B. A. C. 7221	6.3	0.94	8.8	12 54.1	20 3 40.0	+ 8 45.6	-0.1730	0.5338	0.1244	+18 -45
B. A. C. 7242	6.5	0.92	8.5	11 56.3	4 53.6	+ 9 57.0	-1.0805	0.5337	0.1257	-37 -90
8 Aquarii	6.8	0.88	9.0	13 26.2	8 18.7	-10 44.1	+1.0042	0.5333	0.1293	+77 +25
ν Aquarii	4.6	+0.83	+ 8.4	-11 45.7	13 12.7	- 5 59.0	-0.1908	0.5330	+0.1343	+19 -45
19 Aquarii	5.7	0.75	7.7	10 09.6	21 08.2	+ 1 42.1	-0.8539	0.5324	0.1419	-19 -90
ϵ^1 Capricorni	5.2	0.64	7.3	9 31.6	21 7 09.8	+11 25.6	-0.0778	0.5323	0.1507	+27 -39
ϵ^2 Capricorni	6.2	0.64	7.3	9 43.3	7 48.2	-11 57.2	+0.2326	0.5323	0.1513	+45 -22
36 Aquarii	6.3	0.52	6.5	8 39.7	19 33.0	- 0 33.7	+0.9046	0.5328	0.1602	+81 +18
B. A. C. 7717	6.5	+0.53	+ 6.3	- 8 00.7	19 34.9	- 0 31.9	+0.2028	0.5328	+0.1602	+44 -23
θ Aquarii	4.3	0.49	6.2	8 15.9	23 17.3	+ 3 03.8	+1.0764	0.5328	0.1628	+82 +30
B. A. C. 7793	7.5	0.48	5.7	6 43.8	22 1 36.8	+ 5 19.1	-0.2095	0.5332	0.1643	+21 -46
B. A. C. 7804	6.1	0.46	5.9	7 41.0	2 41.4	+ 6 21.6	+1.0009	0.5334	0.1650	+83 +24
W. B. xxii, 493	6.2	0.43	5.5	7 02.9	6 36.2	+10 09.4	+0.9621	0.5338	0.1674	+83 +22
κ Aquarii	5.5	+0.41	+ 4.7	- 4 43.6	9 53.2	-10 39.6	-0.9953	0.5343	+0.1692	-24 -90
B. A. C. 7951 (mean)	6.7	0.36	4.3	4 43.9	14 57.7	- 5 44.3	-0.1244	0.5349	0.1718	+26 -41
Lalande 44872	7.0	0.34	3.9	3 45.7	19 36.7	- 1 13.9	-0.3630	0.5359	0.1740	+14 -56
B. A. C. 7993	6.5	0.32	4.3	5 19.6	19 41.4	- 1 09.4	+1.3345	0.5359	0.1740	+85 +67
11 Piscium	6.5	0.22	2.6	2 19.5	23 11 42.6	- 9 37.7	+0.9436	0.5398	0.1794	+88 +20
12 Piscium	6.8	+0.23	+ 2.4	- 1 34.1	11 44.5	- 9 35.8	+0.1427	0.5398	+0.1794	+42 -26
13 Piscium	6.4	0.22	2.3	1 37.2	12 57.0	- 8 25.6	+0.4149	0.5402	0.1797	+61 -12
14 Piscium	5.9	0.21	2.3	- 1 47.0	14 01.5	- 7 23.1	+0.7807	0.5405	0.1799	+88 + 9
21 Piscium	6.1	0.18	1.3	+ 0 32.3	21 32.9	- 0 05.8	-0.3302	0.5429	0.1810	+16 -54
25 Piscium	6.3	0.17	+ 0.9	1 33.1	23 18.9	+ 1 36.9	-1.0849	0.5434	0.1811	-31 -88
NEW MOON.										
W. B. (2) iv, 59	6.4	+0.15	- 8.2	+17 01.5	28 18 01.1	- 7 41.0	-0.0335	0.5980	+0.0769	+32 -24
55 Tauri	7.3	0.16	8.6	16 17.2	21 00.0	- 4 49.0	+0.9331	0.5990	0.0713	+90 +33
δ^1 Tauri	4.0	0.18	8.5	17 18.8	22 11.9	- 3 39.8	-0.0181	0.5993	0.0690	+33 -22
63 Tauri	5.6	0.17	8.6	16 32.9	22 24.2	- 3 28.0	+0.7667	0.5994	0.0686	+90 +22
δ^2 Tauri	4.7	+0.18	- 8.5	+17 13.0	22 40.0	- 3 12.8	+0.1106	0.5995	+0.0681	+41 -15
δ^3 Tauri	4.2	0.19	8.5	17 42.2	23 13.0	- 2 41.1	-0.3430	0.5996	0.0670	+15 -42
B. A. C. 1468	6.5	0.24	8.8	18 33.4	29 7 30.1	+ 5 16.6	-0.7144	0.6017	0.0506	- 7 -71
ϵ^1 Tauri	5.1	0.25	8.9	18 40.3	9 31.5	+ 7 13.3	-0.7317	0.6021	0.0465	- 8 -71
B. A. C. 1526	5.8	0.25	9.4	16 59.9	11 56.2	+ 9 32.3	+1.0587	0.6025	0.0416	+90 +45
m Tauri	5.1	+0.30	- 9.2	+18 30.8	15 52.6	-10 40.6	-0.3162	0.6032	+0.0335	+16 -36
111 Tauri	5.2	0.34	9.9	17 17.5	22 37.3	- 4 11.9	+1.0904	0.6038	0.0194	+90 +40
115 Tauri	5.4	0.34	9.8	17 52.6	23 42.4	- 3 09.3	+0.9214	0.6039	0.0171	+71 +12
117 Tauri	6.3	0.34	10.0	17 09.3	30 0 03.3	- 2 49.1	+1.2520	0.6039	0.0164	+90 +68
W. B. (2) v, 606	7.0	0.35	9.7	18 17.1	0 33.0	- 2 20.7	-0.1253	0.6039	0.0154	+42 + 9
119 Tauri	4.6	+0.36	- 9.7	+18 31.2	1 41.2	- 1 15.1	-0.0951	0.6040	+0.0130	+29 -22

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

APRIL.

THE STAR'S					AT CONJUNCTION IN R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1903.0.		Apparent Declination.	Washington Mean Time.	Hour Angle. H	J	x'	y'	N.	S.
		$\Delta\alpha$	$\Delta\delta$								
		s	"	° ' "	d h m	h m				° ' "	
120 Tauri	5.3	+0.37	- 9.8	+18 28.1	30 2 12.4	- 0 45.1	-0.0375	0.6040	+0.0119	+32	-18
B. A. C. 1796	7.5	0.40	9.8	18 56.2	5 43.7	+ 2 37.7	-0.4793	0.6040	0.0044	+ 7	-46
127 Tauri	6.3	0.40	9.9	18 55.8	5 53.6	+ 2 47.3	-0.4719	0.6040	0.0041	+ 7	-45
130 Tauri	5.5	0.41	10.2	17 41.4	7 42.3	+ 4 31.7	+0.7778	0.6039	+0.0003	+90	+29
χ^3 Orionis	5.1	0.47	10.0	19 41.4	13 59.6	+10 34.1	-1.2715	0.6037	-0.0130	-68	-70
71 Orionis	5.1	+0.50	-10.3	+19 11.2	18 30.5	- 9 05.7	-0.8463	0.6031	-0.0225	-16	-71

MAY.

20 Geminorum	6.3	+0.56	-10.9	+17 50.7	1	1	26.3	- 2 26.3	+0.2963	0.6019	-0.0369	+54	- 1
21 Geminorum	6.5	0.56	10.9	17 51.0		1	26.6	- 2 26.1	+0.2911	0.6019	0.0369	+53	- 2
26 Geminorum	5.0	0.60	11.1	17 44.2		5	27.5	+ 1 25.4	+0.2399	0.6010	0.0451	+49	- 6
W.B.(2)vi, 1630	6.2	0.68	11.3	17 53.4		13	27.1	+ 9 06.3	-0.3383	0.5989	0.0610	+15	-41
51 Geminorum	5.4	0.73	11.9	16 19.2		17	52.4	-10 38.7	+0.9529	0.5975	0.0696	+90	+34
λ Geminorum	3.6	+0.74	-11.8	+16 42.7		19	46.4	- 8 49.1	+0.4230	0.5967	-0.0732	+62	+ 1
W.B.(2) vii, 685	5.6	0.81	11.8	17 17.4	2	1	18.6	- 3 29.7	-0.5924	0.5949	0.0834	+ 1	-61
68 Geminorum	5.0	0.81	12.2	16 01.9		2	03.8	- 2 46.3	+0.6116	0.5946	0.0848	+79	+11
1 Cancri	5.9	0.92	12.4	16 02.8		11	37.6	+ 6 25.7	-0.2944	0.5908	0.1015	+18	-42
B. A. C. 2649	6.3	0.93	12.1	16 46.6		12	14.8	+ 7 01.5	-1.0953	0.5906	0.1026	-34	-73
5 Cancri	6.4	+0.94	-12.2	+16 43.2		13	28.6	+ 8 12.5	-1.1653	0.5900	-0.1046	-41	-73
29 Cancri	5.9	1.06	13.0	14 31.7	8	0	47.4	- 4 54.0	-0.2379	0.5851	0.1224	+21	-40
B. A. C. 2872	6.8	1.09	13.4	13 35.1		2	57.6	- 2 48.6	+0.4473	0.5841	0.1255	+63	- 3
A ¹ Cancri	5.6	1.13	13.6	13 01.5		6	57.5	+ 1 02.4	+0.5022	0.5823	0.1311	+68	0
A ² Cancri	5.8	1.15	13.8	12 27.7		8	32.9	+ 2 34.4	+0.8629	0.5816	0.1333	+90	+21
60 Cancri	5.7	+1.19	-13.9	+11 59.6		12	22.9	+ 6 16.0	+0.8187	0.5799	-0.1383	+90	+18
a Cancri	4.3	1.20	13.8	12 13.8		13	28.3	+ 7 19.0	+0.4270	0.5794	0.1397	+61	- 5
κ Cancri	5.0	1.25	14.2	11 03.3		17	27.7	+11 09.8	+1.0531	0.5776	0.1446	+90	+34
B. A. C. 3122	7.0	1.26	13.9	11 57.4		18	19.6	+11 59.8	+0.0123	0.5772	0.1456	+35	-29
ω Leonis	5.6	1.35	14.6	9 28.5	4	2	27.1	- 4 10.2	+1.3158	0.5737	0.1546	+90	+69
ξ Leonis	5.2	+1.36	-13.8	+11 43.5		3	57.6	- 2 42.8	-1.2101	0.5730	-0.1562	-44	-78
h Leonis	5.4	1.37	14.4	10 08.4		3	58.7	- 2 41.8	+0.4022	0.5730	0.1562	+59	- 8
o Leonis	3.8	1.41	14.2	10 19.8		8	00.9	+ 1 11.8	-0.4301	0.5713	0.1601	+11	-57
B. A. C. 3398	6.0	1.48	14.4	9 23.3		14	46.8	+ 7 43.5	-0.5748	0.5686	0.1661	+ 2	-70
11 Sextantis	6.0	1.50	14.6	8 46.4		15	32.0	+ 8 27.2	-0.0712	0.5683	0.1667	+30	-36
π Leonis	5.0	+1.51	-14.6	+ 8 30.3		16	28.0	+ 9 21.2	+0.0461	0.5680	-0.1674	+37	-29
16 Sextantis	7.1	1.56	15.1	6 38.5		20	30.9	-10 44.3	+1.2679	0.5664	0.1705	+90	+53
43 Leonis	6.5	1.62	14.8	7 01.8	5	2	41.9	- 4 46.1	-0.1961	0.5642	0.1746	+23	-44
35 Sext. (1 st star)	6.0	1.73	14.9	5 15.1		11	56.3	+ 4 09.6	-0.0076	0.5613	0.1795	+34	-34
d Leonis	5.0	1.82	14.9	4 08.1		19	49.7	+11 47.0	-0.2866	0.5591	0.1825	+18	-51
ρ^3 Leonis	5.7	+1.85	-15.2	+ 2 28.7		22	46.5	- 9 22.2	+0.8817	0.5584	-0.1833	+90	+15
B. A. C. 3836	7.2	1.89	14.9	2 47.6	6	1	59.1	- 6 16.0	-0.0328	0.5577	0.1841	+32	-36
75 Leonis	5.4	1.91	14.9	2 32.4		3	33.2	- 4 45.0	-0.0602	0.5573	0.1843	+31	-37
76 Leonis	6.3	1.91	15.0	2 10.7		4	18.7	- 4 01.1	+0.1736	0.5572	0.1845	+44	-24
79 Leonis	5.5	1.94	14.9	+ 1 56.2		6	41.2	- 1 43.3	-0.0150	0.5567	0.1849	+33	-35
v Leonis	4.5	+2.01	-15.0	- 0 17.5		12	41.7	+ 4 05.3	+1.1792	0.5556	-0.1854	+90	+39
W. B. xii, 69	7.3	2.19	14.2	2 33.8	7	5	22.2	- 3 47.0	+0.4588	0.5535	0.1834	+63	- 9
B. A. C. 4134	6.0	2.22	14.2	3 25.2		7	59.9	- 1 14.5	+0.8707	0.5533	0.1830	+87	+15
B. A. C. 4135	6.0	2.22	14.2	3 24.9		8	00.1	- 1 14.3	+0.8645	0.5533	0.1830	+87	+15
B. A. C. 4200	5.7	2.27	13.9	4 04.9		12	34.2	+ 3 10.9	+0.7296	0.5530	0.1815	+85	+ 6
B. A. C. 4225	6.3	+2.29	-13.8	- 4 31.3		14	20.9	+ 4 54.1	+0.8666	0.5529	-0.1809	+85	+15
f Virginis	5.9	2.32	13.7	5 18.1		16	46.2	+ 7 14.7	+1.2452	0.5528	0.1799	+85	+47
B. A. C. 4294	6.1	2.36	13.2	5 46.5		21	50.5	-11 51.0	+0.8351	0.5527	0.1777	+84	+13
h Virginis	5.5	2.57	11.3	9 40.1	8	19	14.4	+ 8 51.1	+1.2726	0.5532	0.1638	+80	+52
m Virginis	5.3	2.57	10.5	8 13.0		23	19.6	-11 11.8	-0.9236	0.5534	0.1605	-21	-90
B. A. C. 4591	6.2	+2.60	-10.3	- 9 13.6	9	1	57.4	- 8 39.1	-0.2750	0.5535	-0.1582	+15	-51

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

MAY.

THE STAR'S					AT CONJUNCTION IN R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1903.0.		Apparent Declination.	Washington Mean Time.	Hour Angle, <i>H</i>	<i>Y</i>	<i>x'</i>	<i>y'</i>	N.	S.
		$\Delta\alpha$	$\Delta\delta$								
		s	"	° ' "	d h m	h m				°	°
W. B. xiii, 825	6.8	+2.62	- 9.7	- 9 05.2	9 5 59.7	- 4 44.7	-1.0551	0.5538	-0.1544	-32	-90
96 Virginis	6.5	2.68	9.0	9 52.7	12 11.8	+ 1 15.2	-1.1574	0.5543	0.1483	-42	-90
2 Libræ	6.3	2.72	8.1	11 16.4	18 57.0	+ 7 47.1	-0.6531	0.5548	0.1411	- 6	-83
B. A. C. 4772	6.6	2.72	8.0	11 13.9	19 32.5	+ 8 21.5	-0.7808	0.5548	0.1405	-15	-90
B. A. C. 4828	6.0	2.73	7.0	11 53.7	10 1 20.6	-10 01.8	-0.8713	0.5553	0.1339	-20	-90
<i>u</i> Libræ	5.4	+2.80	- 6.4	-13 44.8	7 02.6	- 4 30.9	+0.3633	0.5557	-0.1269	+49	-14
<i>o</i> ¹ Libræ	6.0	2.87	4.0	15 12.0	21 48.6	+ 9 45.9	+0.1904	0.5567	0.1075	+37	-24
<i>o</i> ² Libræ	6.3	2.86	3.8	14 47.3	22 45.0	+10 40.3	-0.3522	0.5568	0.1062	+ 8	-56
ζ Libræ	6.2	2.90	3.4	16 22.8	11 1 09.6	-10 59.8	+1.1084	0.5569	0.1028	+74	+35
ζ Libræ	5.8	2.89	3.2	16 16.7	2 17.2	- 9 54.4	+0.8844	0.5569	0.1012	+74	+18
ζ ⁴ Libræ	5.4	+2.90	- 3.1	-16 31.5	3 19.7	- 8 54.1	+1.0464	0.5570	-0.0997	+73	+30
η Libræ	5.5	2.87	2.3	15 21.9	8 32.1	- 3 52.0	-0.7048	0.5572	0.0922	-15	-90
θ Libræ	4.3	2.90	1.4	16 26.7	13 02.8	+ 0 29.8	+0.0617	0.5573	0.0855	+27	-31
49 Libræ	5.6	2.87	- 1.1	16 14.9	16 06.5	+ 3 27.4	-0.4066	0.5573	0.0808	+ 1	-61
χ Ophiuchi	5.0	2.90	+ 1.2	18 14.2	12 4 27.0	- 8 36.5	+0.8713	0.5571	0.0617	+72	+17
ϕ Ophiuchi	4.4	+2.86	+ 1.3	-16 24.1	6 23.9	- 6 43.5	-1.2420	0.5570	-0.0586	-63	-90
24 Scorpii	5.2	2.87	2.3	17 33.2	11 13.8	- 2 03.2	-0.2518	0.5568	0.0510	+ 6	-50
29 Ophiuchi	6.5	2.85	3.9	18 44.5	20 39.5	+ 7 03.9	+0.6369	0.5560	0.0356	+63	+ 2
B. A. C. 5771	6.2	2.81	4.2	17 28.8	23 39.9	+ 9 58.3	-0.8428	0.5557	0.0307	-29	-90
B. A. C. 5839	6.0	2.78	5.0	17 39.2	18 5 06.2	- 8 46.2	-0.7962	0.5551	-0.0218	-27	-90
B. A. C. 6060	6.5	+2.69	+ 7.6	-18 47.0	22 00.8	+ 7 35.2	+0.3069	0.5524	+0.0057	+33	-17
Y Sagittarii	Var.	2.60	9.2	18 54.0	14 10 05.1	- 4 43.8	+0.6235	0.5499	0.0250	+60	+ 1
B. A. C. 6287	6.0	2.56	9.7	18 47.2	14 17.4	- 0 39.7	+0.6177	0.5489	0.0316	+60	+ 1
B. A. C. 6292	7.5	2.55	9.7	18 58.1	14 49.8	- 0 08.4	+0.8343	0.5488	0.0324	+71	+15
B. A. C. 6294	5.2	2.55	9.7	18 28.0	14 53.5	- 0 04.8	+0.8229	0.5488	0.0325	+35	-18
ρ ¹ Sagittarii	3.9	+2.30	+12.0	-18 01.6	15 15 09.4	- 0 35.2	+1.0317	0.5427	+0.0686	+72	+29
ν Sagittarii	4.7	2.28	11.4	16 08.1	15 13.1	- 0 31.6	-1.0596	0.5427	0.0687	-42	-90
ϵ ² Sagittarii	5.6	2.18	12.2	16 30.8	16 0 31.1	+ 8 28.9	+0.0583	0.5403	0.0816	+27	-31
ϵ ¹ Sagittarii	5.0	2.17	12.2	16 20.9	1 24.3	+ 9 20.4	-0.0507	0.5400	0.0827	+11	-37
B. A. C. 6746	5.5	2.16	12.1	15 41.5	1 55.4	+ 9 50.5	-0.7361	0.5399	0.0834	-17	-90
γ Sagittarii	5.0	+2.08	+12.5	-15 44.7	9 02.7	- 7 15.4	-0.0479	0.5380	+0.0928	+22	-37
B. A. C. 6992	6.2	1.94	12.8	15 05.3	20 25.8	+ 3 46.7	+0.3603	0.5353	0.1068	+48	-14
β Capricorni	3.4	1.94	12.9	15 05.1	20 32.9	+ 3 53.6	+0.3692	0.5353	0.1070	+48	-14
B. A. C. 7009	7.0	1.93	12.8	14 33.9	21 46.5	+ 5 05.0	-0.0743	0.5350	0.1084	+22	-39
B. A. C. 7063	6.2	1.88	13.1	15 22.6	17 1 35.8	+ 8 47.3	+1.2481	0.5342	0.1129	+75	+52
B. A. C. 7087	6.2	+1.86	+12.8	-14 03.1	3 10.9	+10 19.5	-0.0382	0.5338	+0.1147	+25	-37
B. A. C. 7221	6.3	1.76	12.6	12 54.0	11 31.7	- 5 34.9	-0.3154	0.5322	0.1239	+11	-54
B. A. C. 7242	6.5	1.74	12.3	11 56.2	12 45.7	- 4 23.1	-1.2265	0.5320	0.1251	-52	-90
8 Aquarii	6.8	1.70	12.9	13 26.1	16 12.2	- 1 02.8	+0.8652	0.5313	0.1287	+77	+16
ν Aquarii	4.6	1.65	12.3	11 45.7	21 08.6	+ 3 44.7	-0.3351	0.5305	0.1336	+10	-55
19 Aquarii	5.7	+1.55	+11.7	-10 09.5	18 5 08.2	+11 29.8	-1.0027	0.5295	+0.1411	-28	-90
ϵ ¹ Capricorni	5.2	1.44	11.5	9 31.5	15 16.4	- 2 40.2	-0.2231	0.5286	0.1498	+19	-47
ϵ ² Capricorni	6.2	1.43	11.6	9 43.2	15 55.2	- 2 02.5	+0.0888	0.5286	0.1503	+36	29
36 Aquarii	6.3	1.30	11.0	8 39.6	19 3 49.1	+ 9 30.2	+0.7660	0.5283	0.1591	+81	+ 9
B. A. C. 7717	6.5	1.30	10.7	8 00.6	3 51.0	+ 9 32.0	+0.0601	0.5283	0.1591	+36	-31
θ Aquarii	4.3	+1.26	+10.7	- 8 15.8	7 36.5	-10 49.2	+0.9395	0.5284	+0.1616	+82	+20
ρ Aquarii	5.4	1.24	10.6	8 18.3	9 20.4	- 9 08.4	+1.2653	0.5285	0.1627	+82	+51
R. A. C. 7793	7.5	1.24	10.1	6 43.7	9 58.1	- 8 31.8	-0.3533	0.5285	0.1631	+13	-56
B. A. C. 7804	6.1	1.22	10.4	7 40.9	11 03.6	- 7 28.3	+0.8644	0.5285	0.1638	+82	+15
W. B. xxii, 493	6.2	1.18	10.0	7 02.8	15 02.0	- 3 36.9	+0.8269	0.5288	0.1661	+83	+12
κ Aquarii	5.5	+1.15	+ 9.0	- 4 43.6	18 22.1	- 0 22.9	-1.1414	0.5291	+0.1679	-37	-90
B. A. C. 7951 (mean)	6.7	1.09	8.7	4 43.8	23 31.5	+ 4 37.3	-0.2631	0.5298	0.1705	+19	-50
B. A. C. 7986	5.8	1.06	8.9	5 30.1	20 3 15.2	+ 8 14.2	+1.2126	0.5302	0.1722	+84	+43
Lalande 44872	7.0	1.06	8.3	3 45.7	4 15.1	+ 9 12.4	-0.5008	0.5304	0.1727	+ 6	-67
B. A. C. 7993	6.5	1.04	8.8	5 19.6	4 19.8	+ 9 16.9	+1.2070	0.5304	0.1727	+85	+43
11 Piscium	6.5	+0.90	+ 6.9	- 2 19.4	20 37.0	+ 1 04.6	+0.8230	0.5341	+0.1781	+88	+12

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

MAY.

THE STAR'S					AT CONJUNCTION IN R. A.					Limiting Parallels	
Name.	Mag.	Red'ns from 1903.0.		Apparent Declination.	Washington Mean Time.	Hour Angle. <i>H</i>	<i>Y</i>	<i>x'</i>	<i>y'</i>	N.	S.
		$\Delta\alpha$	$\Delta\delta$		d h m	h m					
12 Piscium	6.8	+0.90	+ 6.6	- 1 34.0	20 20 38.9	+ 1 06.5	+0.0169	0.5341	+0.1781	+35	-33
13 Piscium	6.4	0.89	6.6	1 37.2	21 52.7	+ 2 18.0	+0.2920	0.5344	0.1784	+52	-18
14 Piscium	5.9	0.88	6.6	- 1 46.9	22 58.3	+ 3 21.6	+0.6605	0.5347	0.1786	+81	+ 2
21 Piscium	6.1	0.82	5.3	+ 0 32.3	21 6 37.2	+10 46.5	-0.4509	0.5372	0.1798	+10	-63
25 Piscium	6.3	0.82	4.9	1 33.1	8 24.9	-11 29.1	-1.2083	0.5378	0.1800	42	-88
B. A. C. 221	5.7	+0.63	+ 1.4	+ 4 46.9	22 11 13.7	- 9 31.2	+0.1954	0.5498	+0.1772	+46	-22
B. A. C. 274	7.0	0.58	1.0	5 57.6	16 40.0	- 4 15.5	-0.0799	0.5527	0.1752	+30	-38
ϵ Piscium	4.5	0.58	0.6	7 22.1	18 07.6	- 2 50.7	-1.2949	0.5535	0.1746	-55	-83
73 Piscium	6.4	0.56	1.1	5 08.2	19 02.2	- 1 58.0	-1.1938	0.5541	0.1742	+90	+42
ζ Piscium	5.4	0.54	0.2	7 03.8	23 08.7	+ 2 00.4	-0.1034	0.5564	0.1723	+28	-39
88 Piscium	6.1	+0.53	+ 0.3	+ 6 28.9	23 36.5	+ 2 27.3	+0.5805	0.5567	+0.1721	+74	- 1
B. A. C. 410	7.4	0.50	- 0.2	6 54.3	23 3 24.2	+ 6 07.4	+0.7891	0.5589	0.1700	+90	+12
θ Piscium	4.4	0.45	1.5	8 40.2	13 35.9	- 8 01.7	+0.6575	0.5653	0.1631	+83	+ 5
54 Ceti	5.8	0.45	2.1	10 33.7	16 02.7	- 5 39.9	-0.8974	0.5670	+0.1611	-17	-79
NEW MOON.											
71 Orionis	5.1	+0.34	-10.3	+19 11.2	28 2 31.8	+ 0 43.3	-0.7338	0.6130	-0.0216	- 8	-71
20 Geminorum	6.3	0.37	10.7	17 50.7	9 14.8	+ 7 09.9	+0.4017	0.6120	0.0363	+60	+ 4
21 Geminorum	6.5	0.37	10.7	17 51.0	9 15.1	+ 7 10.1	+0.3965	0.6120	0.0363	+60	+ 4
22 Geminorum	7.2	0.38	10.4	19 30.1	10 07.7	+ 8 00.7	-1.2725	0.6118	0.0381	-67	-70
26 Geminorum	5.0	0.39	10.8	17 44.2	13 08.6	+10 54.3	+0.3509	0.6112	0.0446	+57	0
W.B.(2), vi, 1630	6.2	+0.44	-10.9	+17 53.4	20 53.2	- 5 40.0	-0.2096	0.6090	-0.0609	+22	-33
51 Geminorum	5.4	0.47	11.4	16 19.2	29 1 10.2	- 1 33.2	+1.0684	0.6076	0.0696	+90	+42
7 Geminorum	3.6	0.48	11.3	16 42.7	3 00.6	+ 0 12.8	+0.5482	0.6068	0.0733	+73	+ 9
W.B.(2), vii, 685	5.6	0.52	11.2	17 17.4	8 22.5	+ 5 21.9	-0.4469	0.6047	0.0829	+ 9	-50
68 Geminorum	5.0	0.53	11.5	16 01.9	9 06.5	+ 6 04.1	+0.7409	0.6044	0.0852	+90	+19
1 Cancri	5.9	+0.60	-11.6	+16 02.8	18 23.0	- 9 01.3	-0.1430	0.6001	-0.1023	+26	-32
B. A. C. 2649	6.3	0.61	11.4	16 46.6	18 59.1	- 8 26.6	-0.9326	0.5998	0.1033	-21	-73
5 Cancri	6.4	0.62	11.4	16 43.2	20 10.7	- 7 17.8	-1.0006	0.5992	0.1054	-26	-73
29 Cancri	5.9	0.72	12.0	14 31.7	30 7 10.6	+ 3 16.7	-0.0759	0.5935	0.1234	+30	-31
B. A. C. 2872	6.8	0.74	12.3	13 35.2	9 17.3	+ 5 18.5	+0.6028	0.5922	0.1266	+78	+ 6
A ¹ Cancri	5.6	+0.78	-12.4	+13 01.5	13 11.1	+ 9 03.5	+0.6600	0.5901	-0.1322	+84	+ 9
A ² Cancri	5.8	0.80	12.5	12 27.7	14 44.1	+10 33.0	+1.0178	0.5892	0.1344	+90	+32
60 Cancri	5.7	0.84	12.6	11 59.6	18 28.5	- 9 51.0	+0.9771	0.5870	0.1395	+90	+29
α Cancri	4.3	0.85	12.6	12 13.8	19 32.3	- 8 49.6	+0.5909	0.5864	0.1409	+76	+ 4
κ Cancri	5.0	0.89	12.8	11 03.3	23 26.2	- 6 04.4	+1.2129	0.5842	0.1458	+90	+49
B. A. C. 3122	7.0	+0.90	-12.5	+11 57.4	31 0 16.9	- 4 15.5	+0.1836	0.5837	-0.1469	+45	-19
ξ Leonis	5.2	1.00	12.4	11 43.6	9 43.1	+ 4 50.1	-1.0230	0.5784	0.1574	-26	-78
h Leonis	5.4	1.01	12.9	10 08.4	9 44.2	+ 4 51.1	+0.5745	0.5784	0.1574	+74	+ 1
θ Leonis	3.8	1.05	12.7	10 19.8	13 42.0	+ 8 40.5	-0.2488	0.5762	0.1613	+20	-45
B. A. C. 3398	6.0	1.12	12.8	9 23.4	20 21.3	- 8 54.6	-0.3907	0.5726	0.1672	+13	-55
11 Sextantis	6.0	+1.14	-13.0	+ 8 46.4	21 05.8	- 8 11.6	+0.1093	0.5722	-0.1677	+41	-26
π Leonis	5.0	+1.15	-13.0	+ 8 30.4	22 01.0	- 7 18.4	+0.2259	0.5717	-0.1685	+48	-19

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43 Leonis	6.5	+1.27	-13.1	+ 7 01.9	1 8 07.2	+ 2 26.5	-0.0134	0.5668	-0.1754	+34	-33
35 Sext. (1 st star)	6.0	1.39	13.2	5 15.1	17 16.5	+11 17.0	+0.1741	0.5626	0.1801	+44	-24
d Leonis	5.0	1.49	13.1	4 08.1	2 1 07.5	- 5 07.9	-0.1058	0.5595	0.1830	+28	-42
f Leonis	5.7	1.53	13.6	2 28.7	4 03.7	- 2 17.6	+1.0583	0.5584	0.1837	+90	+29
B. A. C. 3836	7.2	+1.58	-13.2	+ 2 47.6	7 15.8	+ 0 48.1	+0.1449	0.5572	-0.1844	+43	-26
75 Leonis	5.4	1.60	13.2	2 32.4	8 49.8	+ 2 19.0	+0.1172	0.5568	0.1847	+41	-27
76 Leonis	6.3	1.61	13.3	2 10.7	9 35.2	+ 3 02.8	+0.3504	0.5565	0.1848	+56	-14
79 Leonis	5.5	1.64	13.2	+ 1 56.2	11 57.6	+ 5 20.5	+0.1612	0.5557	0.1851	+44	-25
W. B. xii, 69	7.3	1.95	12.8	- 2 33.8	3 10 43.7	+ 3 21.8	+0.6207	0.5503	0.1835	+77	0
B. A. C. 4134	6.0	+1.99	-12.8	- 3 25.2	13 22.6	+ 5 55.5	+1.0311	0.5500	-0.1829	+87	+26

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

JUNE.

THE STAR'S				AT CONJUNCTION IN R. A.						Limiting Parallels.	
Name.	Mag.	Red'ns from 1903.0.		Apparent Declination.	Washington Mean Time.	Hour Angle, <i>H</i>	<i>Y</i>	<i>x'</i>	<i>y'</i>	N.	S.
		$\Delta\alpha$	$\Delta\delta$								
B. A. C. 4135	6.0	+1.99	-12.8	- 3 24.9	8 13 22.8	+ 5 55.7	+1.0249	0.5500	-0.1828	+87	+26
B. A. C. 4200	5.7	2.05	12.5	4 04.9	17 59.2	+10 23.2	+0.8860	0.5493	0.1813	+86	+16
B. A. C. 4225	6.3	2.08	12.5	4 31.3	19 46.9	-11 52.7	+1.0217	0.5491	0.1806	+85	+26
B. A. C. 4294	6.1	2.18	12.1	5 46.4	4 3 21.2	- 4 33.1	+0.9829	0.5484	0.1774	+84	+23
<i>m</i> Virginis	5.3	2.48	9.6	8 13.0	5 5 10.4	- 3 33.6	-0.8150	0.5482	0.1603	-14	-90
B. A. C. 4591	6.2	+2.53	- 9.5	- 9 13.6	7 50.5	- 0 58.5	-0.1671	0.5481	-0.1581	+22	-44
W. B. xiii, 825	6.8	2.57	8.9	9 05.2	11 56.4	+ 2 59.5	-0.9570	0.5485	0.1544	-24	-90
96 Virginis	6.5	2.64	8.2	9 52.7	18 14.1	+ 9 05.0	-1.0696	0.5493	0.1484	-34	-90
2 Libræ	6.3	2.73	7.5	11 16.4	6 1 05.4	- 8 17.0	-0.5732	0.5497	0.1414	- 2	-74
B. A. C. 4772	6.6	2.73	7.4	11 13.9	1 41.5	- 7 42.0	-0.7026	0.5497	0.1408	-10	-90
B. A. C. 4828	6.0	+2.77	- 6.4	-11 53.7	7 34.9	- 2 00.1	-0.8034	0.5503	-0.1343	-15	-90
μ Libræ	5.4	2.87	6.0	13 44.8	13 21.8	+ 3 35.7	+0.4288	0.5509	0.1274	+54	-10
σ^1 Libræ	6.0	3.01	3.7	15 12.0	7 4 19.9	- 5 55.3	+0.2298	0.5526	0.1084	+39	-22
σ^2 Libræ	6.3	3.01	3.5	14 47.3	5 17.1	- 5 00.0	-0.3174	0.5527	0.1071	+ 9	-54
ζ^1 Libræ	6.2	3.06	3.3	16 22.8	7 43.5	- 2 38.3	+1.1464	0.5529	0.1038	+74	+39
ζ^2 Libræ	5.8	+3.06	- 3.1	-16 16.7	8 51.9	- 1 32.1	+0.9193	0.5530	-0.1022	+74	+20
ζ^4 Libræ	5.4	3.07	3.0	16 31.5	9 55.3	- 0 30.9	+1.0802	0.5531	0.1008	+73	+33
γ Libræ	4.0	3.03	2.4	14 28.0	11 10.6	+ 0 42.1	-1.2751	0.5533	0.0990	-65	-90
η Libræ	5.5	3.07	1.9	15 21.9	15 11.3	+ 4 34.8	-0.6887	0.5536	0.0933	-14	-89
θ Libræ	4.3	3.12	1.1	16 26.7	19 45.0	+ 8 59.5	+0.0735	0.5540	0.0867	+28	-30
49 Libræ	5.6	+3.11	- 0.8	-16 14.9	22 50.6	+11 59.2	-0.4024	0.5542	-0.0822	+ 1	-60
χ Ophiuchi	5.0	3.22	+ 1.4	18 14.2	8 11 17.9	+ 0 01.9	+0.8585	0.5546	0.0632	+72	+16
ϕ Ophiuchi	4.4	3.18	1.8	16 24.1	13 15.7	+ 1 55.9	-1.2664	0.5549	0.0601	-68	-90
24 Scorpii	5.2	3.21	2.7	17 33.2	18 07.8	+ 6 38.4	-0.2813	0.5550	0.0526	+ 5	-52
29 Ophiuchi	6.5	3.25	4.3	18 44.5	9 3 36.8	- 8 11.2	+0.5944	0.5549	0.0373	+58	0
B. A. C. 5771	6.2	+3.25	+ 4.9	-17 28.8	6 38.0	- 5 16.0	-0.8957	0.5548	-0.0324	-32	-90
B. A. C. 5839	6.0	3.22	5.8	17 39.2	12 05.8	+ 0 01.1	-0.8585	0.5548	-0.0235	-31	-90
B. A. C. 6060	6.5	3.22	8.6	18 47.0	10 5 02.6	- 7 35.4	+0.2183	0.5528	+0.0040	+28	-22
<i>Y</i> Sagittarii	Var.	3.18	10.5	18 54.0	17 07.2	+ 4 05.8	+0.5150	0.5509	0.0234	+51	- 5
B. A. C. 6287	6.0	3.16	11.1	18 47.2	21 19.4	+ 8 09.9	+0.5023	0.5501	0.0300	+51	- 6
B. A. C. 6292	7.5	+3.15	+11.1	-18 58.0	21 51.8	+ 8 41.2	+0.7184	0.5500	+0.0309	+70	+ 7
B. A. C. 6294	5.2	3.15	11.1	18 28.0	21 55.5	+ 8 44.8	+0.1658	0.5500	0.0309	+28	-25
ρ^1 Sagittarii	3.9	2.99	14.2	18 01.6	22 09.1	+ 8 12.0	+0.8776	0.5443	0.0674	+72	+17
ν Sagittarii	4.7	2.96	13.9	16 08.0	11 22 12.7	+ 8 15.5	-1.2179	0.5443	0.0675	-58	-90
ϵ^1 Sagittarii	5.6	2.90	14.8	16 30.7	12 7 29.7	- 6 44.9	-0.1115	0.5419	0.0804	+17	-40
ϵ^2 Sagittarii	5.0	+2.89	+14.9	-16 20.9	8 22.8	- 5 53.4	-0.2222	0.5416	+0.0816	+11	-48
B. A. C. 6746	5.5	2.88	14.8	15 41.4	8 53.9	- 5 23.3	-0.9093	0.5415	0.0824	-29	-90
ζ Sagittarii	5.0	2.82	15.4	15 44.7	16 00.6	+ 1 30.1	-0.2298	0.5395	0.0917	+12	-49
B. A. C. 6992	6.2	2.71	16.2	15 05.2	13 3 23.1	-11 28.4	+0.1646	0.5365	0.1059	+33	-25
β Capricorni	3.4	2.71	16.2	15 05.0	3 30.2	-11 21.5	+0.1737	0.5364	0.1060	+36	-25
B. A. C. 7009	7.0	+2.70	+16.2	-14 33.8	4 43.7	-10 10.3	-0.2730	0.5361	+0.1075	+ 6	-51
B. A. C. 7063	6.2	2.67	16.6	15 22.6	8 33.1	- 6 27.9	+1.0485	0.5351	0.1121	+75	+30
B. A. C. 7087	6.2	2.64	16.4	14 03.1	10 08.3	- 4 55.5	-0.2433	0.5347	0.1138	+14	-49
B. A. C. 7221	6.3	2.56	16.4	12 54.0	18 29.7	+ 3 10.6	-0.5309	0.5326	0.1229	- 2	-70
8 Aquarii	6.8	2.51	16.8	13 26.0	23 10.7	+ 7 43.2	+0.6489	0.5315	0.1278	+72	+ 2
9 Aquarii	7.0	+2.51	+16.9	-13 54.3	23 47.6	+ 8 19.0	+1.2495	0.5314	+0.1284	+76	+51
ν Aquarii	4.6	2.45	16.5	11 45.6	14 4 07.9	-11 28.5	-0.5612	0.5304	0.1327	- 2	-73
19 Aquarii	5.7	2.36	16.2	10 09.4	12 09.7	- 3 41.0	-1.2392	0.5289	0.1401	-52	-90
ϵ^1 Capricorni	5.2	2.26	16.2	9 31.4	22 21.7	+ 6 12.8	-0.4641	0.5272	0.1487	+ 5	-63
ϵ^2 Capricorni	6.2	2.25	16.2	9 43.2	23 00.8	+ 7 50.8	-0.1510	0.5271	0.1492	+22	43
36 Aquarii	6.3	+2.13	+15.8	- 8 39.5	15 11 01.2	- 5 30.2	+0.5237	0.5259	+0.1579	+66	- 5
B. A. C. 7717	6.5	2.13	15.4	8 00.5	11 03.1	- 5 28.3	-0.1868	0.5259	0.1579	+22	-45
θ Aquarii	4.3	2.09	15.6	8 15.7	14 51.2	- 1 46.9	+0.6972	0.5257	0.1603	+81	+ 4
ρ Aquarii	5.4	2.07	15.6	8 18.2	16 36.1	- 0 05.1	+1.0241	0.5256	0.1614	+82	+26
B. A. C. 7793	7.5	2.07	15.1	6 43.6	17 14.4	+ 0 32.0	-0.6056	0.5256	0.1618	- 1	-77
B. A. C. 7804	6.1	+2.05	+15.4	- 7 40.8	18 20.7	+ 1 36.4	+0.6203	0.5255	+0.1625	+75	0

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

JUNE.

THE STAR'S					AT CONJUNCTION IN R. A.					Limiting Parallels	
Name.	Mag.	Red'ns from 1903.0.		Apparent Declination.	Washington Mean Time.	Hour Angle, <i>H</i>	<i>Y</i>	<i>x'</i>	<i>y'</i>	<i>N.</i>	<i>S.</i>
		$\Delta\alpha$	$\Delta\delta$								
		<i>s</i>	<i>"</i>	<i>°</i>	<i>d</i> <i>h</i> <i>m</i>	<i>h</i> <i>m</i>				<i>°</i>	<i>°</i>
W. B. xxii, 493	6.2	+2.01	+15.1	- 7 02.7	15 22 22.1	+ 5 30.8	+0.5813	0.5255	+0.1648	+72	- 2
B. A. C. 7951 (mean)	6.7	1.92	13.9	4 43.7	16 6 58.9	-10 07.7	-0.5186	0.5257	0.1691	+ 5	-68
B. A. C. 7986	5.8	1.88	14.2	5 30.1	10 46.2	- 6 27.0	+0.9691	0.5259	0.1707	+84	+22
Lalande 44872	7.0	1.88	13.5	3 45.6	11 47.0	- 5 28.0	-0.7589	0.5260	0.1711	- 9	-90
B. A. C. 7993	6.5	1.87	14.0	5 19.5	11 51.9	- 5 23.3	+0.9636	0.5260	0.1712	+85	+21
B. A. C. 8017	6.1	+1.85	+13.9	- 5 13.8	14 03.4	- 3 15.6	+1.2354	0.5262	+0.1720	+85	+45
B. A. C. 8094	5.6	1.78	13.2	4 01.3	21 18.8	+ 3 46.9	+1.1737	0.5271	0.1745	+86	+39
11 Piscium	6.5	1.72	12.2	2 19.3	17 4 27.1	+10 42.4	+0.5791	0.5283	0.1764	+74	- 3
12 Piscium	6.8	1.72	11.9	1 34.0	4 29.0	+10 44.2	-0.2344	0.5283	0.1764	+22	-48
13 Piscium	6.4	1.71	11.8	1 37.1	5 44.3	+11 57.3	+0.0438	0.5286	0.1767	+37	-32
14 Piscium	5.9	+1.70	+11.9	- 1 46.8	6 51.2	-10 57.8	+0.4161	0.5289	+0.1769	+60	-12
21 Piscium	6.1	1.63	10.5	+ 0 32.4	14 39.9	- 3 23.1	-0.7026	0.5308	0.1781	- 5	-88
B. A. C. 221	5.7	1.40	6.1	4 47.0	18 19 57.3	+ 1 00.3	-0.0257	0.5420	0.1756	+33	-35
B. A. C. 274	7.0	1.33	5.7	5 57.7	19 1 31.8	+ 6 24.3	-0.2971	0.5449	0.1738	+18	-51
73 Piscium	6.4	1.30	5.7	5 08.3	3 57.5	+ 8 45.2	+0.9923	0.5462	0.1728	+90	+25
ϵ Piscium	5.7	+1.27	+ 5.4	+ 5 08.3	5 38.7	+10 23.2	+1.2818	0.5472	+0.1721	+90	+54
ζ Piscium	5.4	1.28	4.6	7 03.8	8 10.2	-11 10.2	-0.3122	0.5486	0.1710	+17	-51
88 Piscium	6.1	1.27	4.8	6 29.0	8 38.6	-10 42.7	+0.3787	0.5489	0.1708	+57	-12
B. A. C. 410	7.4	1.23	4.2	6 54.3	12 31.9	- 6 56.9	+0.5947	0.5512	0.1688	+76	0
96 Piscium	6.6	1.20	4.0	6 47.7	15 24.4	- 4 10.1	+1.1926	0.5527	0.1672	+90	+43
σ Piscium	4.4	+1.16	+ 2.6	+ 8 40.2	22 58.4	+ 3 08.9	+0.4775	0.5577	+0.1623	+66	- 5
54 Ceti	5.8	1.16	+ 1.8	10 33.8	20 1 28.5	+ 5 33.9	-1.0878	0.5593	0.1604	-31	-79
31 Arietis	5.6	0.99	- 0.9	12 01.6	21 52.1	+ 1 15.2	+0.4949	0.5737	0.1412	+67	- 2
38 Arietis	5.2	0.95	1.3	12 02.2	21 1 29.0	+ 4 44.4	+0.9852	0.5763	0.1370	+90	+29
B. A. C. 1119	6.4	0.81	4.7	16 13.2	22 0 17.1	+ 2 41.9	-0.4921	0.5929	0.1045	+ 7	-56
B. A. C. 1206	6.0	+0.77	- 5.5	+17 02.2	5 50.7	+ 8 02.9	-0.7565	0.5968	+0.0951	- 9	-73
R. A. C. 1272	6.3	0.72	6.0	17 04.7	11 47.4	-10 14.3	-0.2630	0.6006	0.0845	+19	-37
W.B. (2) iv, 59	6.4	0.71	6.2	17 01.6	13 35.4	- 8 30.6	-0.0610	0.6016	+0.0811	+31	-26
NEW MOON.											
29 Cancr	5.9	+0.59	-11.1	+14 31.7	26 15 46.5	-10 19.5	+0.0864	0.6040	-0.1237	+39	-21
B. A. C. 2872	6.8	0.61	11.3	13 35.2	17 49.0	- 8 21.9	+0.7591	0.6029	0.1270	+90	+16
A ¹ Cancr	5.6	0.63	11.3	13 01.6	21 35.0	- 4 44.8	+0.8227	0.6008	0.1329	+90	+19
A ² Cancr	5.8	0.64	11.5	12 27.8	23 05.0	- 3 18.2	+1.1779	0.5999	0.1352	+90	+47
60 Cancr	5.7	0.67	11.5	11 59.6	27 2 41.8	+ 0 10.1	+1.1441	0.5978	0.1405	+90	+43
α Cancr	4.3	+0.67	-11.4	+12 13.8	3 43.5	+ 1 09.4	+0.7654	0.5972	-0.1419	+90	+15
B. A. C. 3122	7.0	0.71	11.4	11 57.4	8 18.4	+ 5 33.8	+0.3725	0.5945	0.1480	+58	- 9
ξ Leonis	5.2	0.78	11.1	11 43.6	17 25.5	- 9 39.8	-0.8009	0.5890	0.1589	-11	-78
θ Leonis	5.4	0.79	11.5	10 08.4	17 26.5	- 9 38.9	+0.7724	0.5890	0.1590	+90	+13
σ Leonis	3.8	0.82	11.3	10 19.8	21 16.4	- 5 57.6	-0.0328	0.5866	0.1629	+32	-33
B. A. C. 3398	6.0	+0.88	-11.3	+ 9 23.4	28 3 42.4	+ 0 14.2	-0.1634	0.5828	-0.1690	+25	-41
11 Sextantis	6.0	0.89	11.5	8 46.4	4 25.5	+ 0 55.7	+0.3299	0.5823	0.1696	+54	-14
π Leonis	5.0	0.90	11.5	8 30.4	5 18.9	+ 1 47.2	+0.4458	0.5818	0.1703	+63	- 7
43 Leonis	6.5	1.01	11.5	7 01.9	15 05.8	+11 12.9	+0.2220	0.5761	0.1775	+47	-20
48 Leonis	5.2	1.05	11.0	7 27.0	20 13.6	- 7 50.4	-1.1180	0.5732	0.1804	-34	-83
35 Sext. (1 st star)	6.0	+1.11	-11.5	+ 5 15.2	23 58.6	- 4 13.3	+0.4159	0.5712	-0.1822	+60	-10
δ Leonis	5.0	1.20	11.3	4 08.1	29 7 36.4	+ 3 08.4	+0.1454	0.5673	0.1850	+43	-25
ρ Leonis	5.7	1.23	11.7	2 28.7	10 27.9	+ 5 54.0	+1.2965	0.5659	0.1858	+88	+55
B. A. C. 3836	7.2	1.28	11.3	2 47.7	13 35.0	+ 8 54.7	+0.3966	0.5645	0.1865	+59	-12
75 Leonis	5.4	1.30	11.4	2 32.4	15 06.7	+10 23.3	+0.3702	0.5638	0.1867	+57	-14
76 Leonis	6.3	+1.31	-11.4	+ 2 10.7	15 51.0	+11 06.0	+0.6008	0.5635	-0.1868	+76	- 1
79 Leonis	5.5	1.34	11.3	+ 1 56.2	18 10.0	-10 39.7	+0.4150	0.5625	0.1871	+60	-11
W. B. xii, 69	7.3	1.66	10.9	- 2 33.7	30 16 28.4	+10 53.9	+0.8746	0.5544	0.1851	+87	+15
B. A. C. 4134	6.0	1.70	11.0	3 25.2	19 04.8	-10 34.9	+1.2812	0.5537	0.1844	+87	+52
B. A. C. 4135	6.0	1.70	11.0	3 24.8	19 05.0	-10 34.7	+1.2750	0.5537	0.1844	+87	+51
B. A. C. 4200	5.7	+1.76	-10.7	- 4 04.9	23 37.4	- 6 11.2	+1.1368	0.5525	-0.1828	+86	+35

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

JULY.

THE STAR'S					AT CONJUNCTION IN R. A.						Limiting Parallels.	
Name.	Mag.	Red'ns from 1903.0.		Apparent Declination.	Washington Mean Time.	Hour Angle, <i>H</i>	<i>Y</i>	<i>x'</i>	<i>y'</i>	<i>N.</i>	<i>S.</i>	
		$\Delta\alpha$	$\Delta\delta$									
		<i>s</i>	<i>"</i>	<i>°</i>	<i>d h m</i>	<i>h m</i>				<i>°</i>	<i>°</i>	
B. A. C. 4225	6.3	+1.79	-10.7	- 4 31.3	1 1 23.7	- 4 28.5	+1.2708	0.5521	-0.1821	+86	+50	
MARS				4 40.0	8 24.8	+ 2 18.9	+0.1552	0.5341	0.1708	+42	-25	
B. A. C. 4294	6.1	1.90	10.3	5 46.4	8 52.6	+ 2 45.8	+1.2303	0.5505	0.1787	+84	+45	
77 Virginis	7.0	2.20	8.2	7 07.6	2 6 38.2	- 0 10.9	-1.0902	0.5478	0.1644	-34	-90	
81 Virginis	7.0	2.22	8.1	7 22.7	8 37.4	+ 1 44.5	-1.1514	0.5476	0.1628	-39	-90	
m Virginis	5.3	+2.25	- 8.1	- 8 13.0	10 32.5	+ 3 35.8	-0.5785	0.5476	-0.1612	0	-74	
B. A. C. 4591	6.2	2.31	8.0	8 13.5	13 12.3	+ 6 10.6	+0.0645	0.5475	0.1590	+35	-31	
W. B. xiii, 825	6.8	2.35	7.4	9 05.2	17 18.1	+10 08.4	-0.7283	0.5474	0.1555	- 9	-90	
96 Virginis	6.5	2.43	6.8	9 52.6	23 36.2	- 7 45.6	-0.8491	0.5474	0.1493	-18	-90	
κ Virginis	4.3	2.46	6.5	9 49.5	3 1 27.6	- 5 57.7	-1.1823	0.5474	0.1474	-45	-90	
2 Libræ	6.3	+2.55	- 6.2	-11 16.4	6 28.5	- 1 06.4	-0.3632	0.5476	-0.1423	+10	-57	
B. A. C. 4772	6.6	2.55	6.1	11 13.9	7 04.8	- 0 31.3	-0.4935	0.5476	0.1416	+ 3	-67	
B. A. C. 4828	6.0	2.60	5.2	11 53.7	12 59.5	+ 5 11.9	-0.6028	0.5478	0.1351	- 4	-77	
μ Libræ	5.4	2.73	5.1	13 44.8	18 48.3	+10 49.6	+0.6197	0.5481	0.1284	+70	0	
o ¹ Libræ	6.0	2.93	3.0	15 12.0	4 9 52.6	+ 1 24.7	+0.3959	0.5492	0.1095	+50	-12	
o ² Libræ	6.3	+2.93	- 2.7	-14 47.3	10 50.2	+ 2 20.4	-0.1535	0.5493	-0.1082	+17	-44	
ζ ¹ Libræ	5.8	3.00	2.5	16 16.7	14 26.7	+ 5 50.0	+1.0785	0.5496	0.1034	+74	+33	
ζ ⁴ Libræ	5.4	3.01	2.4	16 31.5	15 30.6	+ 6 41.7	+1.2377	0.5497	0.1019	+73	+51	
B. A. C. 5188	6.6	3.02	1.1	14 44.0	20 31.2	+11 42.7	-1.2018	0.5501	0.0950	-54	-90	
η Libræ	5.5	3.03	1.2	15 21.9	20 49.4	-11 59.8	-0.5438	0.5501	0.0946	- 5	-72	
θ Libræ	4.3	+3.10	- 0.5	-16 26.7	5 1 25.6	- 7 32.4	+0.2109	0.5505	-0.0881	+36	-22	
49 Libræ	5.6	3.10	- 0.2	-16 14.9	4 32.9	- 4 31.2	-0.2720	0.5507	0.0835	+ 9	-51	
χ Ophiuchi	5.0	3.27	+ 1.9	18 14.2	17 06.9	+ 7 38.4	+0.9680	0.5517	0.0649	+72	+24	
φ Ophiuchi	4.4	3.24	2.5	16 24.1	19 05.7	+ 9 33.3	-1.1669	0.5518	0.0618	-53	-90	
24 Scorpii	5.2	3.29	3.2	17 33.2	6 0 00.4	- 9 41.6	-0.1893	0.5520	0.0543	+10	-46	
29 Ophiuchi	6.5	+3.38	+ 4.8	-18 44.5	9 34.2	- 0 26.4	+0.6687	0.5520	-0.0392	+66	+ 4	
B. A. C. 5771	6.2	3.37	5.5	17 28.8	12 36.9	+ 2 30.2	-0.8317	0.5521	0.0344	-29	-90	
B. A. C. 5839	6.0	3.40	6.4	17 39.2	18 07.2	+ 7 49.9	-0.8061	0.5521	-0.0255	-28	-90	
B. A. C. 6060	6.5	3.47	9.3	18 47.0	7 11 10.5	+ 0 20.0	+0.2366	0.5512	+0.0018	-29	-21	
Y Sagittarii	Var.	3.50	11.4	18 54.0	23 18.4	-11 55.5	+0.5072	0.5500	0.0212	+50	- 5	
B. A. C. 6287	6.0	+3.50	+12.0	-18 47.2	8 3 31.4	- 7 50.6	+0.4850	0.5494	+0.0278	+48	- 7	
B. A. C. 6292	7.5	3.47	12.0	18 58.0	4 03.9	- 7 19.2	+0.7004	0.5493	0.0286	+68	+ 6	
B. A. C. 6294	5.2	3.49	12.1	18 28.0	4 07.6	- 7 15.6	+0.1466	0.5493	0.0287	+26	-26	
ρ ¹ Sagittarii	3.9	3.45	15.7	18 01.5	9 4 23.5	- 7 46.1	+0.8061	0.5450	0.0653	+72	+12	
ε ¹ Sagittarii	5.6	3.40	16.7	16 30.7	13 43.9	+ 1 16.8	-0.2047	0.5429	0.0785	+12	-47	
ε ² Sagittarii	5.0	+3.39	+16.9	-16 20.8	14 36.9	+ 2 08.1	-0.3176	0.5427	+0.0797	+ 6	-54	
B. A. C. 6746	5.8	3.38	16.9	15 41.4	15 07.9	+ 2 38.1	-1.0078	0.5425	0.0804	-36	-90	
ζ Sagittarii	5.0	3.35	17.6	15 44.7	22 14.1	+ 9 31.1	-0.3414	0.5409	0.0899	+ 6	-56	
B. A. C. 6992	6.2	3.29	18.7	15 05.2	10 9 35.4	- 3 28.6	+0.0299	0.5381	0.1042	+28	-33	
β Capricorni	3.4	3.29	18.7	15 05.0	9 42.5	- 3 21.7	+0.0388	0.5380	0.1044	+28	-32	
B. A. C. 7009	7.0	+3.27	+18.8	-14 33.8	10 55.9	- 2 10.6	-0.4110	0.5377	+0.1058	+ 4	-61	
B. A. C. 7063	6.2	3.26	19.2	15 22.5	14 44.8	+ 1 31.3	+0.0949	0.5368	0.1104	+75	+19	
B. A. C. 7087	6.2	3.24	19.2	14 03.0	16 19.8	+ 3 03.5	-0.3922	0.5363	0.1122	+ 6	-59	
τ ² Capricorni	5.3	3.23	19.5	15 17.4	18 52.1	+ 5 31.1	+1.2747	0.5358	0.1151	+75	+57	
B. A. C. 7221	6.3	3.18	19.6	12 53.9	11 0 40.0	+11 08.4	-0.6971	0.5344	0.1215	-11	-90	
8 Aquarii	6.8	+3.15	+20.0	-13 26.0	5 20.5	- 8 19.5	+0.4762	0.5333	+0.1264	+58	- 8	
9 Aquarii	7.0	3.15	20.1	13 54.2	5 57.3	- 7 43.8	+1.0768	0.5332	0.1270	+76	+32	
ν Aquarii	4.6	3.11	20.0	11 45.6	10 17.2	- 3 31.7	-0.7457	0.5322	0.1313	-13	-90	
ε ¹ Capricorni	5.2	2.96	20.2	9 31.4	12 4 29.9	- 9 51.6	-0.6807	0.5285	0.1475	- 7	-86	
ε ² Capricorni	6.2	2.96	20.2	9 43.1	5 09.1	- 9 13.5	-0.3674	0.5284	0.1480	+11	-57	
36 Aquarii	6.3	+2.86	+20.2	- 8 39.4	17 10.2	+ 2 26.3	+0.2913	0.5266	+0.1567	+49	-18	
B. A. C. 7717	6.5	2.86	19.8	8 00.4	17 12.1	+ 2 28.2	-0.4221	0.5266	0.1567	+ 9	-61	
θ Aquarii	4.3	2.83	20.1	8 15.7	21 00.7	+ 6 10.2	+0.4601	0.5262	0.1592	+61	- 9	
ρ Aquarii	5.4	2.81	20.1	8 18.2	22 46.0	+ 7 51.3	+0.7864	0.5260	0.1602	+82	+10	
B. A. C. 7793	7.5	2.81	19.7	6 43.6	23 24.3	+ 8 29.4	-0.8516	0.5259	0.1606	-16	-90	
B. A. C. 7804	6.1	+2.80	+19.9	- 7 40.7	13 0 30.8	+ 9 34.0	+0.3782	0.5258	+0.1613	+56	-14	

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

JULY.

THE STAR'S					AT CONJUNCTION IN R. A.					Limiting Parallel	
Name.	Mag.	Red'ns from 1903.0.		Apparent Declination.	Washington Mean Time.	Hour Angle, <i>H</i>	<i>Y</i>	<i>x'</i>	<i>y'</i>	N.	S.
		$\Delta\alpha$	$\Delta\delta$		d h m	h m					
W. B. xxii, 493	6.2	+2.77	+19.7	- 7 02.7	13 4 32.9	-10 30.9	+0.3342	0.5255	+0.1635	+52	-16
B. A. C. 7951 (mean)	6.7	2.69	18.8	4 43.6	13 12.7	- 2 06.4	-0.7817	0.5251	0.1678	-11	-90
B. A. C. 7986	5.8	2.66	19.0	5 30.0	17 01.6	+ 1 35.8	+0.7108	0.5250	0.1694	+85	+ 5
Lalande 44872	7.0	2.66	18.5	3 45.5	18 02.8	+ 2 35.2	-1.0286	0.5250	0.1698	-27	-90
B. A. C. 7993	6.5	2.65	18.9	5 19.4	18 07.6	+ 2 39.9	+0.7038	0.5250	0.1696	+84	+ 5
B. A. C. 8017	6.1	+2.63	+18.9	- 5 13.7	20 20.2	+ 4 48.5	+0.9755	0.5251	+0.1707	+85	+22
B. A. C. 8094	5.6	2.57	18.2	4 01.2	14 3 39.5	+11 55.1	+0.9077	0.5253	0.1731	+86	+18
11 Piscium	6.5	2.51	17.4	2 19.2	10 52.5	- 5 04.6	+0.3039	0.5260	0.1749	+52	-18
12 Piscium	6.8	2.52	17.1	1 33.9	10 54.5	- 5 02.7	-0.5156	0.5260	0.1749	+ 6	-68
13 Piscium	6.4	2.51	17.1	1 37.0	12 10.7	- 3 48.7	-0.2361	0.5261	0.1751	+21	-48
14 Piscium	5.9	+2.50	+17.1	- 1 46.7	13 18.4	- 2 43.0	+0.1382	0.5262	+0.1754	+42	-26
21 Piscium	6.1	2.45	15.8	+ 0 32.5	21 13.6	+ 4 58.2	-0.9939	0.5275	0.1764	-23	-89
44 Piscium	5.8	2.28	14.1	1 24.4	15 15 35.7	- 1 12.7	+1.3115	0.5319	0.1760	+90	+58
B. A. C. 221	5.7	2.23	11.3	4 47.1	16 3 05.0	+ 9 55.6	-0.3139	0.5359	0.1736	+17	-52
B. A. C. 274	7.0	2.16	10.9	5 57.8	8 47.6	- 8 32.4	-0.5864	0.5387	0.1718	+ 2	-73
73 Piscium	6.4	+2.13	+10.9	+ 5 08.4	11 16.9	- 6 07.7	+0.7193	0.5393	+0.1709	+90	+ 7
7 Piscium	5.7	2.10	10.6	5 08.4	13 00.8	- 4 27.1	+1.0135	0.5401	0.1702	+90	+26
7 Piscium	5.4	2.12	9.8	7 03.9	15 36.2	- 1 56.3	-0.5938	0.5413	0.1691	+ 1	-73
88 Piscium	6.1	2.10	9.9	6 29.1	16 05.4	- 1 28.3	+0.1011	0.5416	0.1688	+40	-27
B. A. C. 410	7.4	2.06	9.3	6 54.4	20 04.9	+ 2 23.7	+0.3221	0.5435	0.1669	+54	-15
96 Piscium	6.6	+2.03	+ 8.7	+ 6 47.7	23 02.2	+ 5 15.4	+0.9298	0.5449	+0.1652	+90	+21
o Piscium	4.4	1.98	7.5	8 40.3	17 6 49.2	-11 12.6	+0.2121	0.5493	0.1605	+47	-20
31 Arietis	5.6	1.79	3.3	12 01.7	18 6 25.2	+11 36.1	+0.2576	0.5642	0.1400	+50	-15
38 Arietis	5.2	1.74	2.8	12 02.3	10 09.0	- 8 47.7	+0.7600	0.5663	0.1359	+90	+14
W. B. ii, 1033	5.9	1.66	+ 1.3	12 48.9	19 34.7	+ 0 18.1	+1.1814	0.5734	0.1245	+90	+48
B. A. C. 1119	6.4	+1.55	- 1.7	+16 13.3	19 9 39.4	-10 07.7	-0.6970	0.5835	+0.1045	- 5	-72
B. A. C. 1206	6.0	1.50	2.7	17 02.3	15 22.7	- 4 37.2	-0.9531	0.5875	0.0954	-23	-73
B. A. C. 1272	6.3	1.44	3.4	17 04.8	21 29.4	+ 1 15.7	-0.4413	0.5918	0.0852	+ 9	-50
W. B. (2), iv, 59	6.4	1.40	3.6	17 01.6	23 20.3	+ 3 02.4	-0.2333	0.5930	0.0819	+21	-36
55 Tauri	7.3	1.36	3.8	16 17.3	20 2 21.0	+ 5 56.2	+0.7516	0.5950	0.0765	+90	+20
d ¹ Tauri	4.0	+1.38	- 4.3	+17 18.8	3 33.4	+ 7 05.8	-0.1931	0.5958	+0.0742	+23	-33
63 Tauri	5.6	1.35	4.1	16 33.0	3 45.8	+ 7 17.7	+0.5930	0.5959	0.0739	+77	+11
d ² Tauri	4.7	1.36	4.3	17 13.1	4 01.6	+ 7 33.0	-0.0616	0.5960	0.0734	+31	-25
d ³ Tauri	4.2	1.36	4.5	17 42.3	4 34.9	+ 8 05.0	-0.5120	0.5964	0.0723	+ 5	-54
75 Tauri	5.3	1.32	4.2	16 08.5	5 47.8	+ 9 15.1	+1.1491	0.5972	0.0701	+90	+51
a Tauri	1.0	+1.30	- 4.8	+16 18.8	8 47.5	-11 52.3	+1.1761	0.5991	+0.0644	+90	+54
B. A. C. 1468	6.5	1.28	5.7	18 33.5	12 52.8	- 7 56.5	-0.8311	0.6015	0.0565	-14	-71
i Tauri	5.1	1.26	6.0	18 40.4	14 53.7	- 6 00.4	-0.8355	0.6026	0.0525	-14	-71
B. A. C. 1526	5.8	1.21	5.8	17 00.0	17 17.4	- 3 42.4	+0.9593	0.6040	0.0476	+90	+37
m Tauri	5.1	1.21	6.6	18 30.8	21 11.7	+ 0 02.7	-0.3836	0.6068	0.0397	+13	-42
111 Tauri	5.2	+1.12	- 7.0	+17 17.5	21 3 49.7	+ 6 24.7	+1.0497	0.6093	+0.0257	+90	+46
115 Tauri	5.4	1.11	7.2	17 52.6	4 53.5	+ 7 26.0	+0.4930	0.6097	0.0234	+68	+10
117 Tauri	6.3	1.09	7.1	17 09.4	5 14.1	+ 7 45.8	+1.2174	0.6008	0.0226	+90	+63
W. B. (2), v, 606	7.0	1.10	7.4	18 17.1	5 43.0	+ 8 13.4	+0.1063	0.6101	0.0216	+41	-12
119 Tauri	4.6	1.09	7.6	18 31.2	6 49.8	+ 9 17.6	-0.1046	0.6104	0.0192	+28	-23
120 Tauri	5.3	+1.09	- 7.6	+18 28.2	7 20.2	+ 9 46.7	-0.0446	0.6108	+0.0181	+32	-19
B. A. C. 1796	7.5	1.06	8.1	18 56.2	10 46.3	-10 55.5	-0.4592	0.6121	0.0106	+ 8	-45
127 Tauri	6.3	1.06	8.0	18 55.8	10 55.9	-10 46.4	-0.4509	0.6121	0.0103	+ 9	-45
130 Tauri	5.5	1.03	7.9	17 41.5	12 41.6	- 9 04.9	+0.7917	0.6127	+0.0064	+90	+29
χ^2 Orionis	5.8	1.03	8.6	19 43.7	15 31.9	- 6 21.5	-1.2150	0.6136	0.0000	-50	-70
χ^3 Orionis	5.1	+1.00	- 8.8	+19 41.4	18 46.9	- 3 14.5	-1.1866	0.6146	-0.0071	-45	-70
NEW MOON.											
43 Leonis	6.5	0.87	10.2	7 01.9	26 0 17.2	- 1 47.8	+0.4005	0.5862	0.1787	+59	-11
48 Leonis	5.2	0.90	9.7	7 27.0	5 15.3	+ 2 59.3	-0.9107	0.5836	0.1819	-18	-83
35 Sext. (1 st star)	6.0	+0.94	-10.0	+ 5 15.2	8 53.2	+ 6 29.3	+0.6080	0.5816	-0.1838	+77	0

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

JULY.

THE STAR'S				AT CONJUNCTION IN R. A.						Limiting Parallels.	
Name.	Mag.	Red'ns from 1903.0.		Apparent Declination.	Washington Mean Time.	Hour Angle. H	Y	x'	y'	N.	S.
		$\Delta\alpha$	$\Delta\delta$								
		s	"	°	d h m	h m				°	°
37 Sextantis	6.2	+0.94	-9.6	+6 52.9	26 10 03.1	+7 36.6	-1.2267	0.5810	-0.1844	-45	-83
4 Leonis	5.0	1.01	9.6	4 08.1	16 16.0	-10 24.0	+0.3549	0.5778	0.1869	+56	-14
B. A. C. 3836	7.2	1.06	9.7	2 47.7	22 02.9	-4 49.5	+0.6118	0.5749	0.1885	+77	0
75 Leonis	5.4	1.08	9.7	2 32.5	23 31.4	-3 20.2	+0.5884	0.5742	0.1888	+75	-1
Venus				3 50.2	23 32.8	-3 22.7	-0.7235	0.5485	0.1717	-7	-86
76 Leonis	6.3	+1.09	-9.7	+2 10.8	27 0 14.3	-2 42.9	+0.8164	0.5738	-0.1889	+90	+12
79 Leonis	5.5	1.11	9.5	1 56.2	2 28.7	-0 33.2	+0.6368	0.5728	0.1892	+80	+1
83 Leonis	6.1	1.07	9.0	3 32.4	3 41.9	+0 37.4	-1.2037	0.5722	0.1894	-42	-86
7 Leonis	5.1	1.12	9.0	+3 23.3	4 10.9	+1 05.4	-1.1435	0.5720	0.1894	-35	-87
W. B. xii, 69	7.3	1.37	9.0	-2 32.7	28 0 04.1	-3 42.8	+1.1158	0.5638	0.1874	+87	+33
0 Virginis	4.4	+1.70	-7.0	-5 01.4	29 2 18.7	-2 21.1	-1.1300	0.5561	-0.1746	-36	-90
77 Virginis	7.0	1.86	6.4	7 07.6	13 12.1	+8 10.6	-0.8078	0.5540	0.1663	-13	-90
81 Virginis	7.0	1.89	6.2	7 22.7	15 08.7	+10 03.4	-0.8667	0.5537	0.1647	-17	-90
m Virginis	5.3	1.92	6.3	8 12.9	17 01.3	+11 52.3	-0.3001	0.5534	0.1631	+15	-52
B. A. C. 4591	6.2	1.98	6.3	9 13.5	19 37.9	-9 36.3	+0.3350	0.5530	0.1608	+52	-16
W. B. xiii, 825	6.8	+2.03	-5.9	-9 05.1	23 38.9	-5 43.2	-0.4499	0.5525	-0.1570	+7	-63
96 Virginis	6.5	2.12	5.2	9 52.6	30 5 50.2	+0 15.9	-0.5719	0.5518	0.1509	-1	-74
k Virginis	4.3	2.14	4.9	9 49.4	7 39.6	+2 01.7	-0.9020	0.5516	0.1490	-21	-90
2 Libræ	6.3	2.22	4.7	11 16.3	12 35.9	+6 48.4	-0.0940	0.5512	0.1437	+24	-40
B. A. C. 4772	6.6	2.23	4.6	11 13.9	13 11.5	+7 22.8	-0.2230	0.5510	0.1431	+17	-47
B. A. C. 4828	6.0	+2.28	-3.8	-11 53.7	19 01.5	-10 58.7	-0.3355	0.5507	-0.1365	+11	-55
μ Libræ	5.4	2.42	3.4	13 44.7	21 0 46.1	-5 25.2	+0.8732	0.5505	0.1298	+76	+16
o ¹ Libræ	6.0	2.64	1.9	15 12.0	15 42.5	+9 02.1	+0.6386	0.5502	0.1107	+69	+2
o ² Libræ	6.3	2.64	1.6	14 47.3	16 39.7	+9 57.3	+0.0915	0.5502	0.1094	+31	-29
γ Libræ	4.0	+2.70	-0.5	-14 28.0	22 34.1	-8 19.7	-0.8797	0.5502	-0.1014	-25	-90

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B. A. C. 5188	6.6	+2.75	-0.1	-14 43.9	1 2 17.8	-4 43.3	-0.9626	0.5502	-0.0962	-32	-90
η Libræ	5.5	2.79	-0.2	15 21.9	2 35.9	-4 26.0	-0.3081	0.5502	0.0958	+8	-53
0 Libræ	4.3	+2.85	+0.3	-16 26.7	7 11.0	+0 00.4	+0.4379	0.5502	-0.0893	+51	-10
49 Libræ	5.6	2.85	0.6	16 14.9	10 17.9	+3 01.2	-0.0470	0.5503	0.0848	+21	-37
χ Ophiuchi	5.0	3.07	2.3	18 14.2	22 51.3	-8 49.8	+1.1715	0.5504	0.0661	+72	+44
φ Ophiuchi	4.4	3.03	3.3	16 24.0	2 50.2	-6 54.8	-0.9599	0.5503	0.0631	-35	-90
24 Scorpii	5.2	3.11	3.8	17 33.2	5 45.1	-2 09.5	+0.0077	0.5503	0.0556	+22	-34
29 Ophiuchi	6.5	+3.22	+5.1	-18 44.5	15 20.2	+7 07.0	+0.8490	0.5503	-0.0407	+71	+16
B. A. C. 5771	6.2	3.22	6.0	17 28.8	18 23.3	+10 04.2	-0.6542	0.5502	0.0359	-18	-86
B. A. C. 5839	6.0	3.27	6.9	17 39.2	23 54.6	-8 35.3	-0.6379	0.5500	-0.0272	-18	-83
B. A. C. 6060	6.5	3.43	9.6	18 47.0	3 17 01.8	+7 58.8	+0.3734	0.5492	0.0000	+38	+15
Y Sagittarii	Var.	3.50	11.7	18 54.0	4 5 12.6	-4 13.9	+0.6213	0.5482	+0.0192	+60	+1
B. A. C. 6287	6.0	+3.52	+12.4	-18 47.2	9 26.6	-0 08.0	+0.5910	0.5477	+0.0257	+57	0
B. A. C. 6292	7.5	3.52	12.3	18 58.0	9 59.2	+0 23.4	+0.8054	0.5476	0.0266	+71	+13
B. A. C. 6294	5.2	3.51	12.5	18 28.0	10 02.8	+0 26.9	+0.2512	0.5476	0.0267	+32	-20
ρ ¹ Sagittarii	3.9	3.58	16.3	18 01.5	5 10 22.9	+0 00.8	+0.8621	0.5442	0.0632	+72	+17
v Sagittarii	4.7	3.55	16.5	16 08.0	10 26.5	+0 04.3	-1.2372	0.5442	0.0632	-62	-90
ε ¹ Sagittarii	5.6	+3.57	+17.7	-16 30.7	19 43.9	+9 04.2	-0.1685	0.5426	+0.0763	+13	-44
ε ² Sagittarii	5.0	3.57	17.8	16 20.8	20 37.0	+9 55.7	-0.2831	0.5424	0.0775	+7	-52
B. A. C. 6746	5.5	3.56	18.0	15 41.4	21 08.0	+10 25.7	-0.9730	0.5423	0.0783	-34	-90
g Sagittarii	5.0	3.56	18.8	15 44.6	6 4 14.3	-6 41.3	-0.3230	0.5410	0.0878	+6	-54
B. A. C. 6992	6.2	3.55	20.1	15 05.1	15 35.1	+4 18.5	+0.0243	0.5388	0.1022	+27	-33
β Capricorni	3.4	+3.55	+20.1	-15 05.0	15 42.1	+4 25.3	+0.0328	0.5387	+0.1024	+28	-32
B. A. C. 7009	7.0	3.54	20.3	14 33.7	16 55.3	+5 36.3	-0.3917	0.5385	0.1039	+4	-59
B. A. C. 7063	6.2	3.55	20.5	15 22.5	20 43.8	+9 17.7	+0.8878	0.5378	0.1085	+75	+18
B. A. C. 7087	6.2	3.53	20.7	14 03.0	22 18.6	+10 49.7	-0.4122	0.5375	0.1103	+4	-61
τ ² Capricorni	5.3	3.54	20.9	15 17.4	7 0 50.5	-10 43.1	+1.2488	0.5370	0.1132	+75	+52
B. A. C. 7221	6.3	+3.51	+21.4	-12 53.9	6 37.5	-5 06.6	-0.7345	0.5358	+0.1197	-14	-90

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

AUGUST.

THE STAR'S					AT CONJUNCTION IN R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1903.0.		Apparent Declination.	Washington Mean Time.	Hour Angle, <i>H</i>	<i>Y</i>	<i>x'</i>	<i>y'</i>	N.	S.
		$\Delta\alpha$	$\Delta\delta$		d h m	h m					
8 Aquarii	6.8	+3.50	+21.8	-13 26.0	7 11 17.1	- 0 35.4	+0.4286	0.5349	+0.1247	+54	-10
9 Aquarii	7.0	3.51	21.8	13 54.2	11 53.8	+ 0 00.1	+1.0279	0.5348	0.1253	+76	+28
v Aquarii	4.6	3.48	22.1	11 45.5	16 12.6	+ 4 11.1	-0.8033	0.5340	0.1297	-17	-90
c Capricorni	5.2	3.41	22.9	9 31.3	8 10 20.4	- 2 13.7	-0.7757	0.5309	0.1462	-13	-90
c Capricorni	6.2	3.41	22.9	9 43.0	10 59.3	- 1 36.0	-0.4640	0.5308	0.1467	+ 5	-64
B. A. C. 7620	6.5	+3.39	+23.1	-10 45.7	14 45.0	+ 2 03.0	+1.2499	0.5302	+0.1497	+79	+49
36 Aquarii	6.3	3.36	23.2	8 39.4	22 56.8	+10 00.3	+0.1713	0.5291	0.1556	+42	-25
B. A. C. 7717	6.5	3.36	22.8	8 00.4	22 58.7	+10 02.2	-0.5421	0.5291	0.1556	+ 2	-71
θ Aquarii	4.3	3.35	23.1	8 15.6	9 2 46.1	-10 17.2	+0.3328	0.5287	0.1581	+52	-16
ρ Aquarii	5.4	3.33	23.1	8 18.1	4 31.0	- 8 35.3	+0.6563	0.5286	0.1592	+78	+ 2
B. A. C. 7793	7.5	+3.32	+23.0	- 6 43.5	5 09.0	- 7 58.5	-0.9837	0.5285	+0.1596	-25	-90
B. A. C. 7804	6.1	3.32	23.1	7 40.7	6 15.2	- 6 54.2	+0.2445	0.5284	0.1602	+47	-21
W. B. xxii, 493	6.2	3.30	23.0	7 02.4	10 16.2	- 3 00.3	+0.1932	0.5281	0.1625	+44	-24
B. A. C. 7951 (mean)	6.7	3.25	22.4	4 43.5	18 53.7	+ 5 22.0	-0.9385	0.5275	0.1669	-21	-90
B. A. C. 7986	5.8	3.24	22.6	5 29.9	22 41.6	+ 9 03.2	+0.5487	0.5274	0.1685	+70	- 4
Lalande 44872	7.0	+3.24	+22.4	- 3 45.4	23 42.7	+10 02.5	-1.1939	0.5274	+0.1689	-42	-90
B. A. C. 7993	6.5	3.23	22.6	5 19.4	23 47.4	+10 07.1	+0.5399	0.5274	0.1689	+69	- 5
B. A. C. 8017	6.1	3.22	22.5	5 13.7	10 59.6	-11 44.7	+0.8088	0.5274	0.1698	+85	+11
B. A. C. 8094	5.6	3.18	22.1	4 01.1	9 17.7	- 4 39.4	+0.7299	0.5274	0.1722	+85	+ 6
11 Piscium	6.5	3.14	21.5	2 19.2	16 29.9	+ 2 20.1	+0.1145	0.5277	0.1740	+40	-28
12 Piscium	6.8	+3.15	+21.3	- 1 33.8	16 31.8	+ 2 21.9	-0.7071	0.5277	+0.1740	- 5	-89
13 Piscium	6.4	3.14	21.3	1 36.9	17 47.9	+ 3 35.8	-0.4288	0.5278	0.1743	+10	-61
14 Piscium	5.9	3.14	21.3	- 1 46.6	18 55.6	+ 4 41.5	-0.0550	0.5280	0.1745	+34	-35
21 Piscium	6.1	3.10	20.3	+ 0 32.6	11 2 50.9	-11 37.2	-1.2008	0.5286	0.1755	-42	-89
W. B. xxiii, 1069	6.9	3.05	20.3	- 0 48.8	8 09.6	- 6 28.1	+1.2112	0.5293	0.1757	+89	+43
44 Piscium	5.8	+2.98	+18.7	+ 1 24.4	21 16.3	+ 6 15.2	+1.0937	0.5317	+0.1749	+90	+32
B. A. C. 221	5.7	2.97	17.4	4 47.2	12 8 50.7	- 6 31.2	-0.5493	0.5347	0.1724	+ 4	-70
B. A. C. 274	7.0	2.91	15.7	5 57.9	14 36.5	- 0 56.0	-0.8280	0.5365	0.1705	-13	-84
73 Piscium	6.4	2.88	15.7	5 08.4	17 07.7	+ 1 30.5	+0.4864	0.5373	0.1693	+66	- 7
c Piscium	5.7	2.86	15.4	5 08.5	18 52.7	+ 3 12.3	+0.7804	0.5379	0.1688	+90	+11
ζ Piscium	5.4	+2.88	+14.6	+ 7 04.0	21 30.0	+ 5 44.7	-0.8449	0.5379	+0.1677	-14	-83
88 Piscium	6.1	2.86	14.7	6 29.2	21 59.7	+ 6 13.5	-0.1387	0.5390	0.1674	+26	-41
B. A. C. 410	7.4	2.83	14.1	6 54.5	18 2 02.5	+10 08.7	-0.0826	0.5406	0.1654	+39	-28
96 Piscium	6.6	2.79	13.7	6 47.8	5 02.4	-10 57.0	+0.6948	0.5418	0.1638	+88	+ 6
o Piscium	4.4	2.77	12.2	8 40.4	12 57.3	- 3 17.1	-0.0305	0.5451	0.1589	+33	-34
ξ Arietis	5.4	+2.62	+ 9.1	+10 10.4	14 7 38.0	- 9 12.6	+1.2072	0.5544	+0.1438	+90	+48
31 Arietis	5.6	2.61	7.6	12 01.7	13 04.3	- 3 57.2	+0.0184	0.5574	0.1384	+35	-28
38 Arietis	5.2	2.56	7.0	12 02.4	16 54.1	- 0 15.0	+0.5292	0.5596	0.1343	+70	0
W. B. ii, 1033	5.9	2.47	5.3	12 48.9	15 2 35.7	+ 9 06.7	+0.9623	0.5652	0.1230	+90	+29
B. A. C. 1119	6.4	2.37	1.8	16 13.3	17 06.7	- 0 52.8	-0.9321	0.5742	0.1035	-21	-74
B. A. C. 1206	6.0	+2.34	+ 0.6	+17 02.3	23 01.2	+ 4 49.0	-1.1871	0.5777	+0.0945	-45	-73
B. A. C. 1272	6.3	2.24	- 0.5	17 04.8	16 5 20.4	+10 54.5	-0.6609	0.5816	0.0845	- 4	-68
W. B. (2), iv, 59	6.4	2.22	0.8	17 01.7	7 15.1	-11 15.0	-0.4477	0.5827	0.0813	+ 9	-50
55 Tauri	7.3	2.17	1.0	16 17.3	10 22.0	- 8 15.0	+0.5558	0.5846	0.0760	+73	- 9
α Tauri	4.0	2.17	1.6	17 18.9	11 37.0	- 7 02.8	-0.4022	0.5853	0.0739	+11	-46
63 Tauri	5.6	+2.16	- 1.3	+16 33.0	11 49.7	- 6 50.6	+0.3960	0.5854	+0.0735	+60	0
β Tauri	4.7	2.16	1.6	17 13.1	12 06.2	- 6 34.6	-0.2680	0.5856	0.0731	+19	-37
δ Tauri	4.2	2.16	1.9	17 42.3	12 40.6	- 6 01.5	-0.7245	0.5859	0.0721	- 8	-72
75 Tauri	5.3	2.12	1.5	16 08.6	13 56.1	- 4 48.8	+0.9639	0.5866	0.0699	+90	+35
B. A. C. 1391	4.9	2.11	1.6	15 59.0	14 48.9	- 3 58.0	+1.1877	0.5872	0.0683	+90	+55
B. A. C. 1394	7.5	+2.10	- 1.6	+15 56.3	14 54.3	- 3 52.9	+1.2389	0.5872	+0.0681	+89	+62
B. A. C. 1406	7.5	2.09	1.9	16 07.1	16 05.5	- 2 44.3	+1.1340	0.5879	0.0660	+90	+50
α Tauri	1.0	2.08	2.2	16 18.8	17 02.0	- 1 49.9	+0.9950	0.5884	0.0643	+90	+38
B. A. C. 1468	6.5	2.08	3.4	18 33.5	21 15.9	+ 2 14.4	-1.0380	0.5908	0.0566	-30	-71
i Tauri	5.1	2.05	3.8	18 40.4	23 21.0	+ 4 14.8	-1.0398	0.5919	0.0527	-30	-71
B. A. C. 1526	5.8	+1.98	- 3.6	+17 00.0	17 1 49.8	+ 6 37.9	+0.7863	0.5932	+0.0480	+90	+25

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

AUGUST.

THE STAR'S				AT CONJUNCTION IN R. A.						Limiting Parallels.	
Name.	Mag.	Red'ns from 1903.0.		Apparent Declination.	Washington Mean Time.	Hour Angle, <i>H</i>	<i>Y</i>	<i>x'</i>	<i>y'</i>	N.	S.
		$\Delta\alpha$	$\Delta\delta$		d h m	h m					
<i>m</i> Tauri	5.1	+1.98	- 4.7	+18 30.8	17 5 52.3	+10 31.2	-0.5710	0.5953	+0.0402	+ 2	-56
111 Tauri	5.2	1.85	5.2	17 17.5	12 44.1	- 6 53.0	+0.8936	0.5985	0.0266	+90	+34
115 Tauri	5.4	1.84	5.6	17 52.7	13 50.1	- 5 49.5	+0.3302	0.5990	0.0244	+55	+ 1
117 Tauri	6.3	1.82	5.4	17 09.4	14 11.3	- 5 29.2	+1.0657	0.5992	0.0237	+90	+47
W.B.(2), v.606	7.0	1.83	5.8	18 17.1	14 41.3	- 5 00.4	-0.0610	0.5994	0.0226	+31	-20
119 Tauri	4.6	+1.82	- 6.0	+18 31.2	15 50.3	- 3 54.1	-0.2733	0.5999	+0.0203	+19	-33
120 Tauri	5.3	1.82	6.1	18 28.2	16 21.8	- 3 23.8	-0.2116	0.6001	0.0193	+22	-29
B. A. C. 1796	7.5	1.78	6.7	18 56.3	19 54.8	+ 0 00.9	-0.6266	0.6016	0.0119	- 2	-59
127 Tauri	6.3	1.77	6.7	18 55.9	20 04.7	+ 0 10.4	-0.6179	0.6017	0.0116	- 1	-58
130 Tauri	5.5	1.73	6.5	17 41.5	21 53.9	+ 1 55.3	+0.6457	0.6024	+0.0078	+84	+20
71 Orionis	5.1	+1.61	- 8.3	+19 11.2	18 8 39.8	-11 44.5	-0.8900	0.6058	-0.0149	-19	-71
20 Geminorum	6.3	1.51	8.6	17 50.7	15 29.7	- 5 11.0	+0.2983	0.6075	0.0294	+53	- 1
21 Geminorum	6.5	1.51	8.5	17 51.0	15 29.9	- 5 10.8	+0.2931	0.6075	0.0294	+52	- 1
26 Geminorum	5.0	1.46	8.9	17 44.3	19 25.9	- 1 24.2	+0.2722	0.6083	0.0378	+51	- 4
W.B.(2), vi.1630	6.2	1.38	9.6	17 53.4	19 3 12.1	+ 6 03.3	-0.2368	0.6092	0.0542	+21	-34
51 Geminorum	5.4	+1.32	- 9.6	+16 19.3	7 28.2	+10 09.1	+1.0666	0.6096	-0.0631	+90	+44
2 Geminorum	3.6	1.30	9.8	16 42.8	9 17.8	+11 54.3	+0.5598	0.6096	0.0669	+74	+10
W.B.(2), vii.685	5.6	1.25	10.2	17 17.4	14 36.1	- 7 00.2	-0.3948	0.6096	0.0778	+12	-46
68 Geminorum	5.0	1.23	10.0	16 02.0	15 19.3	- 6 18.8	+0.7903	0.6096	0.0792	+90	+22
1 Cancri	5.9	1.14	10.5	16 02.8	20 0 24.3	+ 2 24.3	-0.0254	0.6089	0.0971	+33	-25
B. A. C. 2649	6.3	+1.14	-10.6	+16 46.6	0 59.5	+ 2 58.1	-0.8025	0.6088	-0.0982	-12	-73
5 Cancri	6.4	1.13	10.7	+16 43.2	2 09.2	+ 4 05.0	-0.8613	0.6086	0.1003	-16	-73
NEW MOON.											
W. B. xii 69	7.3	1.17	7.5	- 2 33.7	24 9 39.8	+ 7 41.0	+1.2469	0.5688	0.1877	+87	+47
8 Virginis	4.4	+1.40	- 5.5	- 5 01.4	25 11 10.0	+ 8 18.0	-0.9307	0.5655	-0.1766	-20	-90
77 Virginis	7.0	1.53	4.8	7 07.5	21 44.4	- 5 29.3	-0.6026	0.5631	0.1683	- 1	-76
81 Virginis	7.0	1.55	4.7	7 22.7	23 37.7	- 3 39.8	-0.6593	0.5627	0.1667	- 4	-83
<i>m</i> Virginis	5.3	1.58	4.6	8 12.9	26 1 27.1	- 1 54.1	-0.0989	0.5624	0.1651	+26	-40
B. A. C. 4591	6.2	1.63	4.6	9 13.5	3 59.2	+ 0 32.9	+0.5299	0.5619	0.1627	+66	- 5
W. B. xiii, 825	6.8	+1.67	- 4.1	- 9 05.1	7 53.4	+ 4 19.1	-0.2424	0.5612	-0.1589	+18	-48
95 Virginis	5.7	1.70	3.3	8 51.1	12 52.5	+ 9 08.1	-1.2674	0.5604	0.1539	-55	-90
96 Virginis	6.5	1.74	3.6	9 52.6	13 54.5	+10 08.0	-0.3595	0.5603	0.1528	+11	-56
97 Virginis	7.0	1.75	3.2	9 26.7	15 31.9	+11 42.2	-1.0566	0.5600	0.1510	-33	-90
<i>k</i> Virginis	4.3	1.76	3.2	9 49.4	15 41.0	+11 51.0	-0.6847	0.5599	0.1509	- 7	-87
2 Libræ	6.3	+1.83	- 3.1	-11 16.3	20 29.4	- 7 30.3	+0.1151	0.5592	-0.1455	+36	-28
B. A. C. 4772	6.6	1.84	3.0	-11 13.8	21 04.1	- 6 56.8	-0.0122	0.5592	0.1448	+29	-35
B. A. C. 4828	6.0	1.88	2.2	-11 53.6	27 2 45.2	- 1 27.2	-0.1216	0.5584	0.1382	+22	-41
<i>μ</i> Libræ	5.4	2.01	2.3	13 44.7	8 21.4	+ 3 57.8	+1.0738	0.5577	0.1313	+76	+32
<i>σ</i> Libræ	6.0	2.22	0.6	15 12.0	22 57.8	- 5 55.0	+0.8438	0.5561	0.1120	+75	+15
<i>σ</i> Libræ	6.3	+2.22	- 0.4	-14 47.3	23 53.9	- 5 00.9	+0.3025	0.5560	-0.1107	+44	-17
<i>γ</i> Libræ	4.0	2.28	+ 0.6	14 28.0	28 5 41.4	+ 0 35.2	-0.6599	0.5555	0.1026	-11	-85
B. A. C. 5188	6.6	2.33	1.1	14 43.9	9 20.9	+ 4 07.4	-0.7427	0.5551	0.0973	-17	-90
<i>η</i> Libræ	5.5	2.34	0.9	15 21.8	9 38.7	+ 4 24.6	-0.0949	0.5551	0.0969	+19	-40
<i>θ</i> Libræ	4.3	2.43	1.4	16 26.7	14 09.2	+ 8 46.2	+0.6425	0.5548	0.0903	+67	+ 2
49 Libræ	5.6	+2.42	+ 1.6	-16 14.8	17 13.0	+11 43.9	+0.1614	0.5546	-0.0858	+33	-25
9 Ophiuchi	4.4	2.62	4.1	16 24.0	29 7 33.3	+ 1 35.8	-0.7508	0.5532	0.0640	-21	-90
24 Scorpii	5.2	2.70	4.5	17 33.2	12 24.9	+ 6 17.8	+0.2095	0.5528	0.0565	+33	-22
29 Ophiuchi	6.5	2.81	5.6	18 44.5	21 54.5	- 8 31.2	+1.0365	0.5519	0.0416	+71	+30
B. A. C. 5771	6.2	2.84	6.5	17 28.8	30 0 56.2	- 5 35.3	-0.4594	0.5516	0.0368	- 7	-65
B. A. C. 5839	6.0	+2.90	+ 7.3	-17 39.2	6 25.2	- 0 17.1	-0.4479	0.5510	-0.0281	- 7	-64
B. A. C. 6060	6.5	3.09	9.7	-18 47.0	23 27.7	- 7 47.9	+0.5437	0.5491	-0.0016	+51	- 3
<i>Y</i> Sagittarii	Var.	3.19	11.6	18 54.0	31 11 37.0	+ 3 58.0	+0.7789	0.5474	+0.0180	+71	+12
B. A. C. 6287	6.0	3.22	12.2	18 47.2	15 50.6	+ 8 03.5	+0.7443	0.5468	0.0245	+71	+10
B. A. C. 6292	7.5	3.23	12.1	18 58.0	16 23.2	+ 8 35.0	+0.9575	0.5468	0.0254	+71	+24
B. A. C. 6294	5.2	+3.25	+12.4	-18 28.0	16 27.1	+ 8 38.7	+0.4052	0.5468	+0.0255	+42	-11

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.											
SEPTEMBER.											
THE STAR'S					AT CONJUNCTION IN R. A.					Limiting Parallels	
Name.	Mag.	Red'ns from 1903.0.		Apparent Declination.	Washington Mean Time.	Hour Angle, <i>H</i>	<i>Y</i>	<i>x'</i>	<i>y'</i>	N.	S.
		$\Delta\alpha$	$\Delta\delta$								
		<i>s</i>	<i>"</i>	<i>°</i>	<i>d h m</i>	<i>h m</i>				<i>°</i>	<i>°</i>
ρ^1 Sagittarii	3.9	+3.39	+16.1	-18 01.5	1 16 47.5	+ 8 12.9	+0.9864	0.5430	+0.0617	+72	+26
ν^1 Sagittarii	4.7	3.35	16.6	16 08.0	16 51.1	+ 8 16.4	-1.1089	0.5430	0.0618	-47	-90
ϵ^1 Sagittarii	5.6	3.41	17.6	16 30.7	2 2 09.1	- 6 43.0	-0.0543	0.5414	0.0748	+20	-37
ϵ^2 Sagittarii	5.0	3.41	17.8	16 20.8	3 02.2	- 5 51.6	-0.1700	0.5412	0.0760	+14	-44
B. A. C. 6746	5.5	3.40	18.0	15 41.4	3 33.3	- 5 21.5	-0.8598	0.5411	0.0767	-26	-90
γ Sagittarii	5.0	+3.44	+18.8	-15 44.6	10 39.9	+ 1 31.9	-0.2201	0.5394	+0.0862	+12	-48
B. A. C. 6992	6.2	3.48	20.1	15 05.1	22 01.0	-11 28.1	+0.1108	0.5380	0.1006	+32	-28
β Capricorni	3.4	3.48	20.2	15 04.9	22 08.0	-11 21.3	+0.1191	0.5380	0.1008	+32	-27
B. A. C. 7009	7.0	3.48	20.4	14 33.7	23 21.4	-10 10.2	-0.3341	0.5378	0.1023	+ 8	-56
B. A. C. 7063	6.2	3.50	20.6	15 22.5	3 3 09.7	- 6 28.9	+0.9657	0.5372	0.1068	+75	+24
B. A. C. 7087	6.2	+3.49	+21.0	-14 03.0	4 44.5	- 4 57.0	-0.3346	0.5370	+0.1087	+ 8	-55
B. A. C. 7221	6.3	3.51	21.9	12 53.9	13 03.1	+ 3 06.4	-0.6683	0.5357	0.1182	-10	-85
8 Aquarii	6.8	3.52	22.2	13 26.0	17 42.3	+ 7 37.2	+0.4854	0.5350	0.1232	+59	- 7
9 Aquarii	7.0	3.52	22.1	13 54.2	18 18.9	+ 8 12.6	+1.0830	0.5349	0.1238	+76	+33
ν Aquarii	4.6	3.51	22.8	11 45.5	22 37.2	-11 36.9	-0.7513	0.5336	0.1284	-13	-90
ϵ^1 Capricorni	5.2	+3.52	+24.0	- 9 31.3	4 16 41.3	+ 5 54.7	-0.7503	0.5321	+0.1450	-11	-90
ϵ^2 Capricorni	6.2	3.53	23.9	9 43.0	17 20.1	+ 6 32.3	-0.4406	0.5320	0.1455	+ 6	-62
B. A. C. 7620	6.5	3.54	24.0	10 45.7	21 04.6	+10 10.2	+1.2633	0.5317	0.1485	+79	+52
36 Aquarii	6.3	3.53	24.4	8 39.4	5 13.8	- 5 55.2	+0.1752	0.5311	0.1546	+42	-24
B. A. C. 7717	6.5	3.53	24.1	8 00.4	5 15.6	- 5 53.4	-0.5365	0.5311	0.1546	+ 2	-70
θ Aquarii	4.3	+3.54	+24.5	- 8 15.6	9 01.6	- 2 14.2	+0.3304	0.5308	+0.1572	+52	-16
ρ Aquarii	5.4	3.53	24.5	8 18.1	10 45.7	- 0 33.2	+0.6501	0.5307	0.1583	+77	+ 2
B. A. C. 7793	7.5	3.53	24.6	6 43.5	11 23.7	+ 0 03.7	-0.9856	0.5307	0.1587	-25	-90
B. A. C. 7804	6.1	3.53	24.6	7 40.6	12 29.4	+ 1 07.5	-0.2375	0.5307	0.1594	+46	-21
W. B. xxii, 493	6.2	3.53	24.6	7 02.4	16 28.6	+ 4 59.5	+0.1802	0.5305	0.1618	+43	-24
B.A.C.7951(mean)	6.7	+3.51	+24.4	- 4 43.5	6 1 02.1	-10 42.1	-0.9609	0.5304	+0.1663	-23	-90
B. A. C. 7986	5.8	3.52	24.6	5 29.9	4 48.1	- 7 02.8	+0.5165	0.5304	0.1680	+67	- 6
Lalande 44872	7.0	3.52	24.6	3 45.4	5 48.7	- 6 04.0	-1.2226	0.5304	0.1685	-45	-90
B. A. C. 7993	6.6	3.52	24.5	5 19.3	5 53.3	- 5 59.5	+0.5061	0.5304	0.1685	+66	- 6
B. A. C. 8017	6.1	3.51	24.5	5 13.6	8 04.3	- 3 52.5	+0.7708	0.5305	0.1694	+85	+ 9
B. A. C. 8094	5.6	+3.51	+24.3	- 4 01.1	15 18.5	+ 3 08.9	+0.6822	0.5307	+0.1719	+84	+ 4
11 Piscium	6.5	3.50	24.0	2 19.1	22 26.7	+10 04.4	+0.0591	0.5313	0.1738	+37	-31
12 Piscium	6.8	3.51	23.9	1 33.8	22 28.6	+10 06.2	-0.7602	0.5313	0.1738	- 9	-90
13 Piscium	6.4	3.51	23.9	1 36.9	23 44.0	+11 19.4	-0.4844	0.5314	0.1741	+ 7	-65
14 Piscium	5.9	3.51	23.8	- 1 46.6	7 0 51.0	-11 35.7	-0.1132	0.5315	0.1743	+28	-41
21 Piscium	6.1	+3.50	+23.2	+ 0 32.6	8 41.6	- 3 59.1	-1.2665	0.5323	+0.1755	-50	-89
W B. xxiii, 1069	6.9	3.48	23.0	- 0 48.8	13 57.3	+ 1 07.1	+1.1329	0.5331	0.1758	+89	+35
44 Piscium	5.8	3.46	21.7	+ 1 24.5	8 2 56.8	-10 16.9	+1.0015	0.5356	0.1750	+90	+23
B. A. C. 221	5.7	3.50	19.3	4 47.3	14 25.4	+ 0 50.7	-0.6505	0.5373	0.1725	- 2	-80
B. A. C. 274	7.0	3.46	19.2	5 57.9	20 08.8	+ 6 23.5	-0.9348	0.5397	0.1706	-23	-84
73 Piscium	6.4	+3.44	+19.1	+ 5 08.5	22 38.9	+ 8 49.0	+0.3760	0.5404	+0.1696	+57	-13
77 Piscium	6.1	3.42	19.1	4 23.8	23 07.1	+ 9 16.3	+1.2552	0.5405	0.1694	+90	+50
ϵ Piscium	5.7	3.42	18.8	5 08.5	9 0 23.3	+10 30.3	+0.6699	0.5410	0.1689	+84	+ 4
ζ Piscium	5.4	3.45	18.2	7 04.1	2 59.8	-10 58.1	-0.9574	0.5418	0.1677	-21	-83
88 Piscium	6.1	3.44	18.3	6 29.2	3 29.2	-10 29.6	-0.2527	0.5419	0.1674	+20	-48
B. A. C. 410	7.4	+3.43	+17.6	+ 6 54.6	7 30.8	- 6 35.6	-0.0348	0.5433	+0.1654	+32	-35
96 Piscium	6.6	3.41	17.2	6 47.9	10 30.0	- 3 42.0	+0.5756	0.5443	0.1637	+73	0
ν Piscium	4.4	3.40	15.8	8 40.4	18 23.4	+ 3 56.4	-0.1557	0.5472	0.1587	+25	-41
ξ Arietis	5.4	3.31	12.5	10 10.5	10 13 04.7	- 1 58.7	+1.0765	0.5548	0.1433	+90	+35
B. A. C. 755	7.0	3.31	12.4	10 07.9	13 59.1	- 1 06.0	+1.2506	0.5552	0.1425	+90	+54
31 Arietis	5.6	+3.32	+11.1	+12 01.8	18 32.4	+ 3 18.3	-0.1184	0.5572	+0.1379	+27	-31
38 Arietis	5.2	3.29	10.5	12 02.4	22 23.4	+ 7 01.6	+0.3933	0.5591	0.1337	+59	- 7
W. B. ii, 1033	5.9	3.22	8.5	12 48.9	11 8 09.7	+ 7 31.9	+0.8278	0.5636	0.1224	+90	+20
B. A. C. 1119	6.4	3.17	4.8	16 13.4	22 51.4	+ 6 39.4	-1.0816	0.5706	0.1027	-33	-74
B. A. C. 1272	6.3	3.05	2.1	17 04.9	12 11 17.8	- 5 20.7	-0.8085	0.5765	0.0838	-13	-73
W. B. (2) iv, 59	6.4	+3.02	+ 1.7	+17 01.7	13 14.8	- 3 27.9	-0.5928	0.5774	+0.0807	0	-62

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

SEPTEMBER.

THE STAR'S					AT CONJUNCTION IN R. A.							Limiting Parallels.	
Name.	Mag.	Red'ns from 1903.0.		Apparent Declination.	Washington Mean Time.	Hour Angle, <i>H</i>	<i>Y</i>	<i>x'</i>	<i>y'</i>	N.	S.		
		$\Delta\alpha$	$\Delta\delta$										
		<i>s</i>	<i>"</i>	<i>°</i>	<i>d</i> <i>h</i> <i>m</i>	<i>h</i> <i>m</i>				<i>°</i>	<i>'</i>		
55 Tauri	7.3	+2.97	+ 1.4	+16 17.3	12 16 25.6	- 0 24.0	+0.4219	0.5789	+0.0754	+62	+ 1		
δ^1 Tauri	4.0	2.98	0.8	17 18.9	17 42.2	+ 0 49.8	-0.5460	0.5795	0.0733	+ 3	-57		
63 Tauri	5.6	2.96	1.0	16 33.1	17 55.3	+ 1 02.4	+0.2612	0.5795	0.0729	+50	- 8		
δ^2 Tauri	4.7	2.97	0.7	17 13.2	18 12.0	+ 1 18.5	-0.4106	0.5797	0.0724	+11	-47		
δ^3 Tauri	4.2	2.98	0.4	17 42.4	18 47.2	+ 1 52.5	-0.8719	0.5800	0.0714	-17	-72		
70 Tauri	6.3	+2.93	+ 1.1	+15 43.2	18 52.5	+ 1 57.6	+1.1898	0.5800	+0.0713	+90	+55		
75 Tauri	5.3	2.93	0.8	16 08.6	20 04.4	+ 3 06.9	+0.8356	0.5806	0.0692	+90	+27		
B. A. C. 1391	4.9	2.92	0.7	15 59.0	20 58.4	+ 3 58.8	+1.0622	0.5809	0.0677	+90	+43		
B. A. C. 1394	7.5	2.90	0.6	15 56.3	21 03.9	+ 4 04.2	+1.1140	0.5811	0.0676	-37	-72		
B. A. C. 1406	7.5	2.89	+ 0.3	16 07.1	22 16.8	+ 5 14.3	+1.0085	0.5815	0.0655	+90	+39		
α Tauri	1.0	+2.89	0.0	+16 18.9	23 14.6	+ 6 10.1	+0.8683	0.5820	+0.0638	+90	+29		
B. A. C. 1468	6.5	2.89	- 1.5	18 33.6	18 3 34.7	+10 20.6	-1.1875	0.5838	0.0561	-46	-71		
δ Tauri	5.1	2.86	1.9	18 40.5	5 43.0	-11 35.8	-1.1889	0.5846	0.0523	-46	-71		
B. A. C. 1526	5.8	2.79	1.8	17 00.0	8 15.6	- 9 08.8	+0.6609	0.5857	0.0477	+86	+18		
m Tauri	5.1	2.80	3.1	18 30.9	12 24.7	- 5 09.1	-0.7124	0.5873	0.0400	- 7	-70		
111 Tauri	5.2	+2.67	- 3.9	+17 17.5	19 28.3	+ 1 38.7	+0.7753	0.5899	+0.0266	+90	+26		
115 Tauri	5.4	2.65	4.3	17 52.7	20 36.2	+ 2 44.1	+0.2046	0.5902	0.0244	+46	- 6		
117 Tauri	6.3	2.63	4.1	17 09.4	20 58.1	+ 3 05.0	+0.9508	0.5904	0.0237	+90	+38		
W.B.(2)v, 606	7.0	2.64	4.6	18 17.1	21 28.9	+ 3 34.7	-0.1916	0.5906	0.0227	+23	-27		
119 Tauri	4.6	2.63	4.9	18 31.3	22 40.0	+ 4 43.1	-0.4063	0.5909	0.0204	+11	-42		
120 Tauri	5.3	+2.62	- 4.9	+18 28.2	23 12.5	+ 5 14.4	-0.3435	0.5911	+0.0194	+14	-38		
B. A. C. 1796	7.5	2.58	5.8	18 56.3	14 2 52.1	+ 8 45.8	-0.7626	0.5923	0.0122	-10	-71		
127 Tauri	6.3	2.57	5.8	18 55.9	3 02.3	+ 8 55.6	-0.7537	0.5923	0.0119	-10	-71		
130 Tauri	5.5	2.52	5.6	17 41.5	4 54.8	+10 43.8	+0.5293	0.5930	+0.0082	+71	+14		
71 Orionis	5.1	2.39	7.9	19 11.2	16 01.9	- 2 34.7	-1.0228	0.5956	-0.0140	-29	-71		
20 Geminorum	6.3	+2.27	- 8.4	+17 50.7	23 05.7	+ 4 12.8	+0.1887	0.5970	-0.0282	+46	- 7		
21 Geminorum	6.5	2.27	8.3	17 51.0	23 06.0	+ 4 13.1	+0.1835	0.5970	0.0282	+45	- 7		
26 Geminorum	5.0	2.20	8.9	17 44.3	15 3 10.1	+ 8 07.7	+0.1657	0.5976	0.0364	+44	- 9		
W.B.(2)vi, 1630	6.2	2.09	9.9	17 53.4	11 12.6	- 8 08.5	-0.3456	0.5984	0.0525	+14	-40		
51 Geminorum	5.4	2.00	9.9	16 19.3	15 37.7	- 3 53.6	+0.9821	0.5987	0.0612	+90	+37		
γ Geminorum	3.6	+1.98	-10.2	+16 42.8	17 31.1	- 2 04.7	+0.4688	0.5987	-0.0649	+65	+ 5		
W.B.(2)vii, 685	5.6	1.91	10.9	17 17.4	23 00.5	+ 3 12.0	-0.4960	0.5988	0.0755	+ 6	-53		
68 Geminorum	5.0	1.88	10.6	16 01.9	23 45.2	+ 3 54.9	+0.7084	0.5988	0.0769	+90	+18		
1 Cancri	5.9	1.76	11.3	16 02.8	16 9 08.8	-11 03.3	-0.1118	0.5984	0.0944	+28	-30		
B. A. C. 2649	6.3	1.76	11.6	16 46.6	9 45.1	-10 28.4	-0.8996	0.5984	0.0955	-19	-73		
5 Cancri	6.4	+1.74	-11.6	+16 43.2	10 57.1	- 9 19.2	-0.9581	0.5982	-0.0977	-23	-73		
29 Cancri	5.9	1.58	11.6	14 31.7	21 55.3	+ 1 13.6	+0.0528	0.5970	0.1166	+37	-23		
B. A. C. 2872	6.8	1.55	11.5	13 35.2	17 0 00.7	+ 3 14.1	+0.7445	0.5966	0.1201	+90	+16		
A ¹ Cancri	5.6	1.51	11.4	13 01.6	3 51.0	+ 6 55.5	+0.8294	0.5958	0.1262	+90	+20		
A ² Cancri	5.8	1.48	11.4	12 27.8	5 22.4	+ 8 23.5	+1.1956	0.5958	0.1286	+90	+50		
60 Cancri	5.7	+1.45	-11.4	+11 59.6	9 02.2	+11 54.8	+1.1806	0.5946	-0.1341	+90	+47		
α Cancri	4.3	1.44	11.5	12 13.8	10 04.5	-11 05.2	+0.8050	0.5946	0.1356	+90	+18		
B. A. C. 3122	7.0	1.39	11.5	11 57.4	14 41.6	- 6 38.7	+0.4348	0.5939	0.1422	+62	- 5		
ξ Leonis	5.2	1.30	11.5	11 43.6	23 48.1	+ 2 07.1	-0.6874	0.5919	0.1541	- 4	-77		
η Leonis	5.4	1.30	11.2	10 08.4	23 49.2	+ 2 08.1	+0.8847	0.5919	0.1541	+90	+21		
ν Leonis	3.8	+1.27	-11.2	+10 19.8	18 3 37.2	+ 5 47.6	+0.1015	0.5910	-0.1586	+40	-25		
B. A. C. 3398	6.0	1.22	10.9	9 23.4	9 57.8	+11 53.9	+0.0071	0.5894	0.1655	+34	-30		
11 Sextantis	6.0	1.22	10.9	8 46.4	10 40.1	-11 25.3	+0.5015	0.5892	0.1662	+67	- 3		
π Leonis	5.0	1.21	10.8	+ 8 30.4	11 32.5	-10 34.9	+0.6214	0.5891	0.1672	+78	+ 3		
NEW MOON.													
81 Virginis	7.0	+1.32	- 3.7	- 7 22.7	22 9 33.2	+ 8 03.8	-0.5877	0.5693	-0.1679	0	-75		
m Virginis	5.3	1.34	3.5	8 12.9	11 20.5	+ 9 47.4	-0.0299	0.5691	0.1664	+30	-36		
B. A. C. 4591	6.2	1.37	3.4	9 13.5	13 49.8	-11 48.5	+0.5954	0.5688	0.1641	+71	- 1		
W. B. xiii, 825	6.8	1.40	2.9	9 05.1	17 39.4	- 8 06.9	-0.1684	0.5683	0.1605	+22	-44		
95 Virginis	5.7	1.42	2.3	8 51.1	22 32.3	- 3 24.1	-1.1816	0.5676	0.1553	-44	-90		
96 Virginis	6.5	+1.45	- 2.4	- 9 52.6	23 33.0	- 2 25.5	-0.2808	0.5675	-0.1542	+15	-51		

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

SEPTEMBER.

THE STAR'S					AT CONJUNCTION IN R. A.					Limiting Parallels	
Name.	Mag.	Red'ns from 1903.0.		Apparent Declination.	Washington Mean Time.	Hour Angle. <i>H</i>	<i>l'</i>	<i>x'</i>	<i>y'</i>	N.	S.
		$\Delta\alpha$	$\Delta\delta$		d h m	h m					
97 Virginis	7.0	+1.46	-2.1	-9 26.7	23 1 08.4	-0 53.3	-0.9704	0.5674	-0.1525	-26	-90
κ Virginis	4.3	1.46	2.0	9 49.4	1 17.1	-0 44.9	-0.6018	0.5673	0.1523	-3	-76
2 Libræ	6.3	1.51	1.9	11 16.3	5 59.5	+3 47.8	+0.1929	0.5667	0.1470	+41	-23
B. A. C. 4772	6.6	1.52	1.8	11 13.8	6 33.4	+4 20.6	+0.0671	0.5667	0.1463	+34	-30
B. A. C. 4828	6.0	1.53	0.9	11 53.6	12 06.8	+9 42.4	-0.0386	0.5661	0.1396	+27	-36
μ Libræ	5.4	+1.64	-0.9	-13 44.7	17 35.3	-9 00.3	+1.1479	0.5654	-0.1327	+76	+39
ϕ^1 Libræ	6.0	1.80	+0.8	15 11.9	24 7 51.7	+4 46.8	+0.9236	0.5636	0.1133	+75	+20
ϕ^2 Libræ	6.3	1.80	0.9	14 47.3	8 46.7	+5 39.9	+0.3876	0.5636	0.1120	+50	-12
γ Libræ	4.0	1.85	1.8	14 27.9	14 26.0	+11 07.7	-0.5031	0.5629	0.1038	-6	-73
B. A. C. 5188	6.6	1.89	2.1	14 43.9	18 00.6	-9 25.0	-0.6446	0.5625	0.0985	-11	-83
η Libræ	5.5	+1.90	+2.0	-15 21.8	18 18.0	-9 08.2	-0.0031	0.5624	-0.0980	+25	-34
θ Libræ	4.3	1.97	2.5	16 26.7	22 42.5	-4 52.7	+0.7287	0.5619	0.0914	+73	+8
49 Libræ	5.6	1.96	2.6	16 14.9	25 1 42.3	-1 58.9	+0.2518	0.5616	0.0868	+38	-20
ϕ Ophiuchi	4.4	2.14	4.8	16 24.0	15 44.7	+11 35.1	-0.6510	0.5593	0.0647	-15	-84
24 Scorpii	5.2	2.21	5.2	17 33.2	20 30.7	-7 48.5	+0.2974	0.5585	0.0571	+38	-17
29 Ophiuchi	6.5	+2.31	+6.2	-18 44.5	26 5 50.1	+1 12.2	+1.1200	0.5570	-0.0421	+71	+38
B. A. C. 5771	6.2	2.34	7.0	17 28.7	8 48.8	+4 04.8	-0.3637	0.5564	0.0372	-1	-57
B. A. C. 5839	6.0	2.39	7.8	17 39.2	14 12.6	+9 17.9	-0.3530	0.5554	0.0284	-2	-56
B. A. C. 6060	6.5	2.59	9.8	18 46.9	27 7 01.4	+1 33.5	+0.6285	0.5520	-0.0013	+59	+2
γ Sagittarii	Var.	2.71	11.4	18 54.0	19 03.4	-10 48.0	+0.8599	0.5494	+0.0177	+71	+17
B. A. C. 6287	6.0	+2.74	+12.0	-18 47.2	23 15.0	-6 44.5	+0.8245	0.5484	+0.0243	+71	+15
B. A. C. 6292	7.5	2.75	11.9	18 58.0	23 47.3	-6 13.3	+1.0365	0.5483	0.0251	+71	+30
B. A. C. 6294	5.2	2.74	12.2	18 28.0	23 51.0	-6 09.7	+0.4869	0.5483	0.0252	+48	-6
ρ^1 Sagittarii	3.9	2.95	15.5	18 01.5	29 0 04.1	-6 42.9	+1.0583	0.5428	0.0612	+72	+32
ν Sagittarii	4.7	2.92	16.1	16 08.0	0 07.7	-6 39.4	-1.0297	0.5428	0.0613	-38	-90
ϵ^1 Sagittarii	5.6	+3.00	+17.0	-16 30.7	9 24.6	+2 20.0	+0.0175	0.5407	+0.0742	+23	-33
ϵ^2 Sagittarii	5.0	3.01	17.2	16 20.8	10 17.7	+3 11.5	-0.0982	0.5406	0.0754	+18	-40
B. A. C. 6746	5.5	3.00	17.4	15 41.4	10 48.7	+3 41.5	-0.7863	0.5404	0.0761	-22	-90
δ Sagittarii	5.0	3.06	18.1	15 44.6	17 55.1	+10 34.6	-0.1513	0.5389	0.0856	+15	-43
B. A. C. 6992	6.2	3.13	19.4	15 05.1	30 5 16.2	-2 25.2	+0.1732	0.5367	0.0999	+35	-24
β Capricorni	3.4	+3.13	+19.5	-15 05.0	5 23.3	-2 18.3	+0.1816	0.5367	+0.1003	+36	-24
B. A. C. 7009	7.0	3.13	19.7	14 33.7	6 36.7	-1 07.2	-0.2713	0.5364	0.1015	+11	-51
B. A. C. 7063	6.2	3.17	19.8	15 22.5	10 25.4	+2 34.5	+1.0245	0.5357	0.1061	+75	+28
B. A. C. 7087	6.2	3.17	20.3	14 03.0	12 00.2	+4 06.5	-0.2743	0.5355	0.1079	+11	-51
B. A. C. 7221	6.3	+3.21	+21.2	-12 53.9	20 19.4	+12 10.4	-0.6118	0.5341	+0.1173	-6	-78

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8 Aquarii	6.8	+3.23	+21.5	-13 26.0	1 0 59.0	-7 18.4	+0.5381	0.5334	+0.1223	-2	-71
9 Aquarii	7.0	+3.25	+21.4	-13 54.2	1 35.7	-6 42.8	+1.1362	0.5334	+0.1230	+76	+37
ν Aquarii	4.6	3.26	22.2	11 45.5	5 54.4	-2 32.0	-0.6993	0.5328	0.1274	-11	-90
ϵ^1 Capricorni	5.2	3.34	23.6	9 31.3	23 59.6	-8 59.4	-0.7081	0.5310	0.1441	-9	-90
ϵ^2 Capricorni	6.2	3.35	23.6	9 43.0	2 0 38.4	-8 21.7	-0.3988	0.5310	0.1447	+9	-59
B. A. C. 7620	6.5	3.37	23.4	10 45.7	4 23.0	-4 43.8	+1.3001	0.5307	0.1477	+79	+60
36 Aquarii	6.3	+3.41	+24.1	-8 39.4	12 32.0	+3 10.7	+0.2097	0.5304	+0.1539	+44	-22
B. A. C. 7717	6.5	3.40	23.9	8 00.4	12 33.8	+3 12.5	-0.5006	0.5304	0.1539	+3	-67
θ Aquarii	4.3	3.42	24.2	8 15.6	16 19.5	+6 50.4	+0.3625	0.5304	0.1566	+54	-14
ρ Aquarii	5.4	3.43	24.3	8 18.1	18 03.6	+8 32.5	+0.6808	0.5303	0.1577	+80	+4
B. A. C. 7793	7.5	3.43	24.6	6 43.5	18 41.3	+9 09.0	-0.9521	0.5303	0.1581	-24	-90
B. A. C. 7804	6.1	+3.43	+24.4	-7 40.7	19 46.9	+10 12.6	+0.2676	0.5303	+0.1588	+48	-19
W. B. xxii, 493	6.2	3.45	24.5	7 02.4	23 45.7	-9 55.7	+0.2087	0.5304	0.1613	+44	-23
B. A. C. 7951 (mean)	6.7	3.48	24.7	4 43.5	3 17.7	-1 38.9	-0.9333	0.5308	0.1659	-21	-90
B. A. C. 7986	5.8	3.50	24.7	5 29.9	12 02.8	+1 59.5	+0.5378	0.5310	0.1677	+69	-4
Lalande 44872	7.0	3.51	25.0	3 45.4	13 03.1	+2 57.9	-1.1963	0.5311	0.1682	-43	-90
B. A. C. 7993	6.5	+3.50	+24.7	-5 19.3	13 07.7	+3 02.5	+0.5269	0.5311	+0.1682	+68	-5

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

OCTOBER.

THE STAR'S					AT CONJUNCTION IN R. A.					Limiting Parallels.		
Name.	Mag.	Red'ns from 1903.0.		Apparent Declination.	Washington Mean Time.	Hour Angle, H	I'	x'	y'	N.	S	
		Δα	Δδ									
		s	"	°	d	h	m			°	°	
B. A. C. 8017	6.1	+3.51	+24.7	- 5 13.6	3	15	18.1	+ 5 08.9	+0.7897	0.5313	+0.1692	+85 +10
B. A. C. 8094	5.6	3.54	24.6	5 01.1		22	29.9	-11 52.1	+0.6975	0.5321	0.1719	+86 + 5
11 Piscium	6.5	3.57	24.6	2 19.1	4	5	35.3	- 4 59.5	+0.0736	0.5330	0.1739	+38 -30
12 Piscium	6.8	3.58	24.7	1 33.7		5	37.1	- 4 57.8	-0.7427	0.5330	0.1739	- 7 -90
13 Piscium	6.4	3.58	24.6	1 36.9		6	52.0	- 3 45.1	-0.4684	0.5332	0.1743	+ 8 -64
14 Piscium	5.9	+3.59	+24.5	- 1 46.6		7	58.5	- 2 40.6	-0.0992	0.5334	+0.1745	+28 -40
21 Piscium	6.1	3.62	24.3	+ 0 32.7		15	45.2	+ 4 52.0	-1.2504	0.5348	0.1758	-46 -89
W. B. xxiii, 1069	6.9	3.62	23.8	- 0 48.8		20	57.9	+ 9 55.2	+1.1358	0.5360	0.1763	+89 +36
44 Piscium	5.8	3.67	22.9	+ 1 24.5	5	9	48.7	- 1 37.4	+0.9991	0.5391	0.1758	+90 +24
B. A. C. 221	5.7	3.77	20.9	4 47.3	21	08.4		+ 9 21.3	-0.6476	0.5424	0.1735	- 2 -79
B. A. C. 274	7.0	+3.76	+21.1	+ 5 58.0	6	2	47.1	- 9 14.6	-0.9316	0.5443	+0.1717	-19 -84
73 Piscium	6.4	3.74	20.8	5 08.5		5	15.0	- 6 47.3	+0.3706	0.5451	0.1707	+57 -13
77 Piscium	6.1	3.73	20.7	4 23.9		5	42.8	- 6 20.5	+1.2445	0.5453	0.1706	+90 +48
c Piscium	5.7	3.73	20.5	5 08.5		6	57.9	- 5 07.7	+0.6622	0.5457	0.1700	+83 + 3
c Piscium	5.4	3.78	20.2	7 04.1		9	32.1	- 2 38.3	-0.9559	0.5466	0.1689	-21 -83
88 Piscium	6.1	+3.77	+20.1	+ 6 29.3	10	01.1		- 2 10.3	-0.2557	0.5468	+0.1686	+20 -48
B. A. C. 410	7.4	3.78	19.6	6 54.6	13	59.1		+ 1 41.2	-0.0399	0.5482	0.1667	+32 -35
96 Piscium	6.6	3.76	19.1	6 47.9	16	55.3		+ 4 30.8	+0.5659	0.5494	0.1650	+71 - 2
o Piscium	4.4	3.81	17.9	8 40.5	7	0 41.6		-11 57.9	-0.1627	0.5525	0.1601	+25 -41
ξ Arietis	5.4	3.81	14.6	10 10.5	19	05.5		+ 5 49.6	+1.0596	0.5602	0.1446	+90 +34
B. A. C. 755	7.0	+3.81	+14.4	+10 08.0	19	59.2		+ 6 41.6	+1.2330	0.5606	+0.1437	+90 +52
31 Arietis	5.6	3.85	13.3	12 01.8	8	0 28.4		+11 01.7	-0.1296	0.5626	0.1391	+27 -36
38 Arietis	5.2	3.83	12.5	12 02.5		4	16.0	- 9 18.4	+0.3795	0.5643	0.1349	+58 - 8
W. B. ii, 1033	5.9	3.80	10.5	12 49.0	13	54.4		+ 0 00.2	+0.8114	0.5685	0.1234	+90 +19
B. A. C. 1119	6.4	3.82	6.7	16 13.4	9	4 26.0		- 9 58.7	-1.0911	0.5747	0.1030	-34 -74
B. A. C. 1272	6.3	+3.76	+ 3.7	+17 04.9	16	46.1		+ 1 55.0	-0.8198	0.5788	+0.0842	-14 -73
W. B. (2) iv, 59	6.4	3.74	3.3	17 01.7	18	42.4		+ 3 47.1	-0.6045	0.5803	0.0811	0 -63
55 Tauri	7.3	3.70	2.8	16 17.4	21	52.1		+ 6 49.9	+0.4093	0.5815	0.0758	+61 0
d Tauri	4.0	3.72	2.3	17 18.9	23	08.3		+ 8 03.3	-0.5579	0.5819	0.0739	+ 2 -58
63 Tauri	5.6	3.69	2.4	16 33.1	23	21.4		+ 8 15.9	+0.2489	0.5820	0.0732	+49 - 9
d Tauri	4.7	+3.71	+ 2.2	+17 13.2	23	38.0		+ 8 31.9	-0.4224	0.5821	+0.0728	+10 -48
d Tauri	4.2	3.72	1.9	17 42.4	10	0 13.0		+ 9 05.6	-0.8838	0.5823	0.0717	-19 -72
70 Tauri	6.3	3.66	2.3	15 43.2	0	18.3		+ 9 10.8	+1.1772	0.5823	0.0716	+90 +54
75 Tauri	5.3	3.66	2.1	16 08.6	1	29.9		+10 19.6	+0.8233	0.5827	0.0696	+90 +26
B. A. C. 1391	4.9	3.64	1.9	15 59.0	2	23.6		+11 11.4	+1.0499	0.5831	0.0680	+90 +42
B. A. C. 1394	7.5	+3.63	+ 1.8	+15 56.4	2	29.1		+11 16.7	+1.1018	0.5831	+0.0679	+90 +46
B. A. C. 1406	7.5	3.63	1.5	16 07.2	3	41.8		-11 33.2	+0.9967	0.5835	0.0657	+90 +38
a Tauri	1.0	3.63	+ 1.1	16 18.9	4	39.4		-10 37.7	+0.8566	0.5838	0.0640	+90 +28
B. A. C. 1468	6.5	3.66	- 0.3	18 33.6	8	58.9		- 6 27.8	-1.2001	0.5852	0.0563	-48 -71
i Tauri	5.1	3.63	0.8	18 40.5	11	07.1		- 4 24.4	-1.2016	0.5858	0.0525	-48 -71
B. A. C. 1526	5.8	+3.56	- 0.9	+17 00.1	13	39.7		- 1 57.4	+0.6508	0.5865	+0.0478	+85 +17
m Tauri	5.1	3.58	2.2	18 30.9	17	48.9		+ 2 02.5	-0.7246	0.5876	0.0401	- 8 -71
111 Tauri	5.2	3.45	3.4	17 17.6	11	0 53.8		+ 8 51.5	+0.7677	0.5893	0.0267	+90 +26
115 Tauri	5.4	3.44	3.8	17 52.7	2	02.0		+ 9 57.1	+0.1953	0.5895	0.0245	+46 - 7
117 Tauri	6.3	3.41	3.6	17 09.4	2	24.0		+10 18.7	+0.9443	0.5896	0.0237	+90 +38
W. B. (2) v, 606	7.0	+3.44	- 4.1	+18 17.2	2	55.1		+10 48.3	-0.2021	0.5897	+0.0228	+22 -29
119 Tauri	4.6	3.43	4.4	18 31.3	4	06.5		+11 57.0	-0.4175	0.5899	0.0205	+10 -43
120 Tauri	5.3	3.42	4.5	18 28.2	4	39.1		-11 31.6	-0.3545	0.5900	0.0194	+14 -38
B. A. C. 1796	7.5	3.39	5.5	18 56.3	8	20.1		- 7 58.9	-0.7753	0.5907	0.0123	-11 -71
127 Tauri	6.3	3.38	5.5	18 55.9	8	30.4		- 7 49.0	-0.7663	0.5907	0.0119	-11 -71
130 Tauri	5.5	+3.33	- 5.5	+17 41.5	10	23.8		- 6 00.0	+0.5229	0.5910	+0.0083	+71 +13
71 Orionis	5.1	3.20	8.3	19 11.2	21	37.7		+ 4 48.5	-1.0371	0.5926	-0.0138	-31 -71
20 Geminorum	6.3	3.08	9.0	17 50.7	12	4 47.3		+11 41.8	+0.1836	0.5927	0.0279	+45 - 7
21 Geminorum	6.5	3.08	9.0	17 51.0	4	47.6		+11 42.1	+0.1780	0.5927	0.0279	+45 - 8
26 Geminorum	5.0	3.01	9.7	17 44.3	8	55.5		- 8 19.4	+0.1612	0.5921	0.0360	+44 -10
W. B. (2) vi, 1630	6.2	+2.89	-11.0	+17 53.4	17	06.8		- 0 26.8	-0.3533	0.5925	-0.0518	+14 -41

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

OCTOBER.

THE STAR'S					AT CONJUNCTION IN R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1903.0.		Apparent Declination.	Washington Mean Time.	Hour Angle, <i>H</i>	<i>Y</i>	<i>x'</i>	<i>y'</i>	N.	S.
		$\Delta\alpha$	$\Delta\delta$		d h m	h m					
51 Geminorum	5.4	+2.80	-11.1	+16 19.2	12 21 37.3	+ 3 53.5	+0.9880	0.5923	-0.0604	+90	+38
2 Geminorum	3.6	2.77	11.5	16 42.7	23 33.2	+ 5 44.9	+0.4699	0.5923	0.0641	+66	+ 5
W.B. (2) vii, 685	5.6	2.69	12.6	17 17.4	13 5 10.0	+11 08.8	-0.5048	0.5916	0.0744	+ 5	-54
68 Geminorum	5.0	2.66	12.0	16 01.9	5 55.8	+11 53.0	+0.7132	0.5913	0.0759	+90	+18
1 Cancri	5.9	2.51	13.3	16 02.7	15 33.5	- 2 51.1	-0.1148	0.5901	0.0930	+28	-30
B. A. C. 2649	6.3	+2.51	-13.6	+16 46.6	16 10.8	- 2 15.2	-0.9125	0.5900	-0.0941	-20	-73
5 Cancri	6.4	2.49	13.7	16 43.1	17 24.7	- 1 04.1	-0.9716	0.5898	0.0962	-24	-73
29 Cancri	5.9	2.30	13.9	14 31.7	4 41.6	+ 9 47.4	+0.0532	0.5877	0.1147	+37	-23
B. A. C. 2872	6.8	2.26	13.7	13 35.1	6 50.7	+11 50.0	+0.7547	0.5873	0.1181	+90	+16
A ² Cancri	5.6	2.20	13.8	13 01.5	10 47.9	- 8 19.9	+0.8418	0.5865	0.1241	+90	+21
A ² Cancri	5.8	+2.17	-13.7	+12 27.7	12 22.1	- 6 49.3	+1.2130	0.5862	-0.1264	+90	+51
60 Cancri	5.7	2.11	13.7	11 59.6	16 08.6	- 3 11.1	+1.1984	0.5857	0.1318	+90	+50
a Cancri	4.3	2.10	13.8	12 13.8	17 12.9	- 2 09.2	+0.8174	0.5851	0.1333	+90	+18
B. A. C. 3122	7.0	2.04	14.0	11 57.4	21 58.6	+ 2 26.0	+0.4428	0.5840	0.1398	+63	- 4
5 Leonis	5.2	1.90	14.2	11 43.5	15 7 22.6	+11 29.3	-0.6952	0.5819	0.1515	- 5	-78
h Leonis	5.4	+1.90	-13.7	+10 08.4	7 23.7	+11 30.3	+0.9001	0.5819	-0.1515	+90	+21
o Leonis	3.8	1.85	13.8	10 19.8	11 19.0	- 8 42.9	+0.1055	0.5810	0.1559	+40	-24
B. A. C. 3398	6.0	1.77	13.5	9 23.3	17 51.8	- 2 24.4	+0.0098	0.5795	0.1627	+34	-31
11 Sextantis	6.0	1.77	13.4	8 46.4	18 35.5	- 1 42.2	+0.5109	0.5793	0.1634	+68	- 3
π Leonis	5.0	1.75	13.3	8 30.4	19 29.6	- 0 50.1	+0.6328	0.5792	0.1643	+80	+ 4
43 Leonis	6.5	+1.65	-12.8	+ 7 01.9	16 5 20.1	+ 8 39.2	+0.4583	0.5771	-0.1727	+63	- 7
48 Leonis	5.2	1.59	12.7	7 27.0	10 27.3	-10 24.6	-0.8571	0.5761	0.1764	-15	-83
35 Sext. (1 st star)	6.0	1.57	12.1	5 15.2	14 10.8	- 6 49.0	+0.6949	0.5754	0.1787	+87	+ 6
37 Sextantis	6.2	1.55	12.4	6 52.9	15 22.3	- 5 40.1	-1.1594	0.5752	0.1795	-38	-83
d Leonis	5.0	1.51	11.5	4 08.1	21 42.4	+ 0 26.6	+0.4605	0.5741	0.1827	+63	- 8
B. A. C. 3836	7.2	+1.47	-10.9	+ 2 47.7	17 3 33.9	+ 6 05.7	+0.7353	0.5732	-0.1851	+90	+ 7
75 Leonis	5.4	1.46	10.9	2 32.5	5 03.3	+ 7 31.9	+0.7154	0.5730	0.1855	+90	+ 6
76 Leonis	6.3	1.45	10.7	2 10.7	5 46.5	+ 8 13.5	+0.9468	0.5729	0.1858	+90	+20
79 Leonis	5.5	1.44	-10.5	+ 1 56.3	8 01.7	+10 24.0	+0.7716	0.5726	0.1864	+90	+ 9
NEW MOON.											
γ Libræ	4.0	+1.60	+ 2.4	-14 27.9	21 23 57.7	- 1 32.6	-0.5902	0.5678	-0.1051	- 7	-76
B. A. C. 5188	6.6	1.62	2.7	14 43.9	22 3 29.6	+ 1 52.0	-0.6727	0.5675	0.0998	-13	-87
η Libræ	5.5	1.63	2.7	15 21.8	3 46.7	+ 2 08.5	-0.0340	0.5675	0.0993	+23	-36
θ Libræ	4.3	1.68	3.2	16 26.6	8 07.5	+ 6 20.3	+0.6918	0.5671	0.0928	+72	+ 5
49 Libræ	5.6	1.65	3.3	16 14.8	11 04.8	+ 9 11.5	+0.2167	0.5668	0.0880	+36	-22
ϕ Ophiuchi	4.4	+1.78	+ 5.4	-16 24.0	23 0 54.4	- 1 27.3	-0.6865	0.5651	-0.0658	-17	-90
24 Scorpii	5.2	1.83	5.8	17 33.2	5 35.8	+ 3 04.5	+0.2548	0.5643	0.0581	+36	-20
29 Ophiuchi	6.5	1.92	6.8	18 44.5	14 46.1	+11 56.1	+1.0691	0.5627	0.0429	+71	+33
B. A. C. 5771	6.2	1.93	7.5	17 28.7	17 41.9	- 9 14.0	-0.4069	0.5621	0.0379	- 3	-61
B. A. C. 5839	6.0	1.97	8.2	17 39.2	23 00.4	- 4 06.3	-0.3982	0.5610	0.0291	- 4	-60
B. A. C. 6060	6.5	+2.12	+10.0	-18 46.9	24 15 33.7	+11 53.8	+0.5718	0.5569	-0.0016	+53	- 1
Y Sagittarii	Var.	2.22	11.4	18 54.0	25 3 25.6	- 0 37.9	+0.7985	0.5535	+0.0176	+71	+13
B. A. C. 6287	6.0	2.25	11.9	18 47.2	7 34.1	+ 3 22.4	+0.7622	0.5523	0.0242	+71	+10
B. A. C. 6292	7.5	2.25	11.7	18 58.0	8 06.1	+ 3 53.3	+0.9731	0.5522	0.0250	+71	+25
B. A. C. 6294	5.2	2.25	12.1	18 28.0	8 09.7	+ 3 56.8	+0.4261	0.5522	0.0251	+35	-10
ρ^1 Sagittarii	3.9	+2.45	+14.8	-18 01.6	26 8 08.4	+ 3 09.2	+0.9902	0.5448	+0.0613	+72	-26
ν Sagittarii	4.7	2.42	15.5	16 08.0	8 12.0	+ 3 2.7	-1.0906	0.5447	0.0614	-46	-90
ϵ^1 Sagittarii	5.6	2.51	16.2	16 30.7	17 25.3	-11 51.4	-0.0489	0.5419	0.0742	+20	-37
ϵ^2 Sagittarii	5.0	2.52	16.3	16 20.8	18 18.1	-11 00.3	-0.1644	0.5416	0.0754	+14	-44
B. A. C. 6746	5.5	2.51	16.6	15 41.4	18 49.0	-10 30.4	-0.8508	0.5415	0.0761	-26	-90
g Sagittarii	5.0	+2.57	+17.2	-15 44.7	27 1 53.5	- 3 39.2	-0.2190	0.5395	+0.0855	+12	-47
B. A. C. 6992	6.2	2.66	18.4	15 05.2	13 13.3	+ 7 19.6	+0.1041	0.5363	0.0998	+31	-28
β Capricorni	3.4	2.66	18.4	15 05.0	13 20.3	+ 7 26.4	+0.1123	0.5363	0.0999	+32	-28
B. A. C. 7009	7.0	2.66	18.6	14 33.8	14 33.6	+ 8 37.4	-0.3400	0.5360	0.1014	+ 7	-55
B. A. C. 7063	6.2	2.71	18.6	15 22.5	18 22.2	-11 41.0	+0.9539	0.5350	0.1059	+75	+23
B. A. C. 7087	6.2	+2.69	+19.2	-14 03.0	19 57.0	-10 09.0	-0.3435	0.5346	+0.1077	+ 8	-56

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

OCTOBER.

THE STAR'S					AT CONJUNCTION IN R. A.							Limiting Parallels.			
Name.	Mag.	Red'ns from 1903.0.		Apparent Declination.	Washington Mean Time.	Hour Angle, <i>H</i>	<i>Y</i>	<i>x'</i>	<i>y'</i>	N.	S.				
		$\Delta\alpha$	$\Delta\delta$												
		<i>s</i>	<i>"</i>	<i>°</i>	<i>'</i>	<i>d</i>	<i>h</i>	<i>m</i>	<i>h</i>	<i>m</i>	<i>°</i>	<i>'</i>			
B. A. C. 7221	6.3	+2.77	+20.1	-12	53.9	28	4	16.7	- 2	04.5	-0.6812	0.5327	+0.1170	-10	-87
8 Aquarii	6.8	2.80	20.3	13	26.0		8	56.9	+ 2	27.3	+0.4682	0.5317	0.1220	+57	- 8
9 Aquarii	7.0	2.81	20.0	13	54.2		9	33.7	+ 3	02.9	+1.0641	0.5316	0.1227	+76	+31
v Aquarii	4.6	2.84	21.0	11	45.5		13	53.2	+ 7	14.6	-0.7687	0.5308	0.1270	-15	-90
c ¹ Capricorni	5.2	2.97	22.4	9	31.3	29	8	03.3	+ 0	52.1	-0.7757	0.5282	0.1436	-13	-90
c ² Capricorni	6.2	+2.98	+22.3	- 9	43.1		8	42.3	+ 1	30.0	-0.4665	0.5282	+0.1441	+ 5	-64
B. A. C. 7620	6.5	3.01	22.0	10	45.8		12	28.2	+ 5	09.1	+1.2345	0.5279	0.1472	+79	+49
36 Aquarii	6.3	3.08	22.9	8	39.4		20	40.0	-10	53.6	+0.1452	0.5274	0.1533	+40	-26
B. A. C. 7717	6.5	3.08	22.5	8	00.4		20	41.9	-10	51.7	-0.5653	0.5274	0.1533	0	-73
θ Aquarii	4.3	3.11	23.0	8	15.6	30	0	29.0	- 7	11.4	+0.2993	0.5273	0.1559	+50	-17
ρ Aquarii	5.4	+3.12	+23.0	- 8	18.1		2	13.7	- 5	29.7	+0.6183	0.5273	+0.1571	+74	0
B. A. C. 7793	7.5	3.12	23.5	6	43.5		2	51.8	- 4	52.8	-1.0150	0.5273	0.1575	-29	-90
B. A. C. 7804	6.1	3.13	23.2	7	40.7		3	57.7	- 3	48.7	+0.2055	0.5273	0.1582	+44	-23
W. B. xxii, 493	6.2	3.16	23.3	7	02.4		7	58.0	+ 0	04.3	+0.1478	0.5274	0.1607	+41	-26
B. A. C. 7951 (mean)	6.7	3.22	23.6	4	43.5		16	33.0	+ 8	24.1	-0.9916	0.5278	0.1654	-25	-90
B. A. C. 7986	5.8	+3.25	+23.6	- 5	29.9		20	19.5	-11	56.1	+0.4820	0.5281	+0.1673	+64	- 6
Lalande 44872	7.0	3.27	23.6	3	45.4		21	20.1	-10	57.3	-1.2521	0.5283	0.1677	-49	-90
B. A. C. 7993	6.5	3.26	23.6	5	19.3		21	24.7	-10	52.8	+0.4716	0.5283	0.1678	+63	- 8
B. A. C. 8017	6.1	3.28	23.5	5	13.6		23	35.9	- 8	45.5	+0.7354	0.5285	0.1687	+83	+ 7
B. A. C. 8094	5.6	3.34	23.6	4	01.1	31	6	49.7	- 1	44.5	+0.0462	0.5295	0.1715	+80	+ 2
11 Piscium	6.5	+3.39	+23.8	- 2	19.1		13	56.9	+ 5	10.0	+0.0264	0.5308	+0.1738	+35	-32
12 Piscium	6.8	3.40	23.9	1	33.8		13	58.8	+ 5	11.8	-0.7891	0.5308	0.1738	-10	-90
13 Piscium	6.4	3.41	23.9	1	36.9		15	13.9	+ 6	24.7	-0.5143	0.5310	0.1741	+ 6	-68
14 Piscium	5.9	+3.42	+23.8	- 1	46.6		16	20.7	+ 7	29.4	-0.1445	0.5310	+0.1744	+26	-43

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W. B. xxiii, 1069	6.9	+3.52	+23.1	- 0 48.8	1 5 21.7	- 3 53.1	+1.0965	0.5345	+0.1765	+89	+32
44 Piscium	5.8	3.63	22.5	+ 1 24.5	18 12.2	+ 8 33.9	+0.9685	0.5387	0.1764	+90	+22
B. A. C. 221	5.7	+3.79	+20.9	+ 4 47.3	2 5 29.7	- 4 29.6	-0.6642	0.5429	+0.1745	- 3	-81
B. A. C. 274	7.0	3.81	21.3	5 58.0	11 06.5	+ 0 56.6	-0.9417	0.5453	0.1729	-20	-84
73 Piscium	6.4	3.81	20.9	5 08.5	13 33.5	+ 3 19.0	+0.3567	0.5403	0.1720	+56	-14
77 Piscium	6.1	3.80	20.6	4 23.9	14 01.1	+ 3 45.7	+1.2270	0.5466	0.1718	+90	+46
c Piscium	5.7	3.80	20.5	5 08.5	15 15.7	+ 4 58.0	+0.6489	0.5474	0.1714	+81	+ 3
ζ Piscium	5.4	+3.87	+20.5	+ 7 04.1	17 48.7	+ 7 26.1	-0.9596	0.5482	+0.1703	-22	-83
88 Piscium	6.1	3.86	20.4	6 29.3	18 17.4	+ 7 53.9	-0.2626	0.5485	0.1701	+19	-48
B. A. C. 410	7.4	3.89	19.9	6 54.6	22 13.3	+11 42.3	-0.0445	0.5503	0.1682	+32	-35
96 Piscium	6.6	3.90	19.4	6 47.9	3 1 08.2	- 9 28.6	+0.5609	0.5517	0.1666	+72	- 1
o Piscium	4.4	3.98	18.4	8 40.5	8 49.2	- 2 02.6	-0.1562	0.5555	0.1619	+25	-40
ξ Arietis	5.4	+4.09	+15.1	+10 10.5	4 2 57.3	- 8 30.8	+1.0738	0.5650	+0.1468	+90	+36
B. A. C. 755	7.0	4.09	14.9	10 08.0	3 50.1	- 7 39.8	+1.2464	0.5655	0.1460	+90	+53
31 Arietis	5.6	4.17	14.0	12 01.9	8 14.6	- 3 24.3	-0.1004	0.5677	0.1414	+28	-35
38 Arietis	5.2	4.18	13.2	12 02.5	11 58.2	+ 0 11.6	+0.4078	0.5698	0.1372	+59	- 6
W. B. ii, 1033	5.9	4.20	11.1	12 49.0	21 25.2	+ 9 18.7	+0.8443	0.5748	0.1257	+90	+21
B. A. C. 1119	6.4	+4.30	+ 7.6	+16 13.4	5 11 38.1	- 0 59.0	-1.0264	0.5819	+0.1057	-28	-74
B. A. C. 1206	6.0	4.33	6.0	17 02.4	17 27.0	+ 4 37.2	-1.2761	0.5846	0.0966	-61	-73
B. A. C. 1272	6.3	4.31	4.4	17 04.9	23 41.3	+10 37.7	-0.7465	0.5873	0.0863	- 9	-73
W. B. (2) iv, 59	6.4	4.30	3.9	17 01.8	6 1 34.8	-11 33.0	-0.5317	0.5881	0.0837	+ 4	-57
55 Tauri	7.3	4.27	3.2	16 17.4	4 40.2	- 8 34.5	+0.4749	0.5893	0.0777	+66	+ 4
41 Tauri	4.0	+4.30	+ 2.8	+17 19.0	5 54.6	- 7 22.9	-0.4825	0.5897	+0.0755	+ 7	-52
63 Tauri	5.6	4.27	2.8	16 33.1	6 07.3	- 7 10.7	+0.3173	0.5898	0.0751	+54	- 5
62 Tauri	4.7	4.29	2.6	17 13.2	6 23.6	- 6 55.0	-0.3470	0.5899	0.0747	+14	-43
δ Tauri	4.2	4.30	2.5	17 42.4	6 57.8	- 6 22.1	-0.8031	0.5901	0.0737	-13	-71
70 Tauri	6.3	4.24	2.6	15 43.2	7 02.9	- 6 17.2	+1.2372	0.5901	0.0735	+90	+61
75 Tauri	5.3	+4.25	+ 2.4	+16 08.6	8 12.8	- 5 10.0	+0.8879	0.5906	+0.0714	+90	+30

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

NOVEMBER.

THE STAR'S					AT CONJUNCTION IN R. A.					Limiting Parallel	
Name.	Mag.	Red'ns from 1903.0.		Apparent Declination.	Washington Mean Time.	Hour Angle, <i>H</i>	<i>Y</i>	<i>x'</i>	<i>y'</i>	N.	S.
		$\Delta\alpha$	$\Delta\delta$		d h m	h m					
B. A. C. 1391	4.9	+4.24	+ 2.1	+15 59.0	6 9 05.3	- 4 19.4	+1.1134	0.5909	+0.0698	+90	+47
B. A. C. 1394	7.5	4.24	2.1	15 56.4	9 10.7	- 4 14.2	+1.1646	0.5909	0.0696	+90	+53
B. A. C. 1406	7.5	4.24	1.7	16 07.2	10 21.5	- 3 06.1	+1.0612	0.5913	0.0675	+90	+43
<i>a</i> Tauri	1.0	4.24	1.3	16 18.9	11 17.9	- 2 11.7	+0.9237	0.5917	0.0658	+90	+32
B. A. C. 1468	6.5	4.29	+ 0.1	18 33.6	15 31.4	+ 1 52.2	-1.1092	0.5930	0.0580	-37	-71
<i>i</i> Tauri	5.1	+4.28	- 0.5	+18 40.5	17 36.6	+ 3 52.6	-1.1090	0.5936	+0.0540	-37	-71
B. A. C. 1526	5.8	4.21	0.9	17 00.1	20 05.7	+ 6 16.1	+0.7276	0.5943	0.0493	+90	+21
<i>m</i> Tauri	5.1	4.26	2.2	18 30.9	7 09.3	+10 10.4	-0.6315	0.5953	0.0415	- 2	-62
111 Tauri	5.2	4.15	3.6	17 17.5	7 04.7	- 7 10.0	+0.8527	0.5965	0.0278	+90	+31
115 Tauri	5.4	4.15	4.1	17 52.7	8 11.6	- 6 05.8	+0.2866	0.5966	0.0256	+52	- 1
117 Tauri	6.3	+4.13	- 4.1	+17 09.4	8 33.0	- 5 45.2	+1.0291	0.5968	+0.0249	+90	+44
W.B. (2) v, 606	7.0	4.15	4.5	18 17.1	9 03.4	- 5 15.9	-0.1069	0.5968	0.0238	+28	-23
119 Tauri	4.6	4.15	4.8	18 31.3	10 13.3	- 4 08.7	-0.3196	0.5972	0.0215	+18	-36
120 Tauri	5.3	4.15	4.9	18 28.2	10 45.3	- 3 37.9	-0.2566	0.5973	0.0205	+18	-33
B. A. C. 1796	7.5	4.13	6.0	18 56.3	14 21.7	- 0 09.8	-0.6715	0.5977	0.0132	- 4	-64
127 Tauri	6.3	+4.12	- 5.9	+18 55.9	14 31.7	- 0 00.3	-0.6627	0.5977	+0.0129	- 4	-63
130 Tauri	5.5	4.07	6.1	17 41.5	16 22.9	+ 1 46.7	+0.6177	0.5979	+0.0091	+81	+19
71 Orionis	5.1	3.99	9.3	19 11.2	8 34.1	-11 37.7	-0.9234	0.5983	-0.0133	-21	-71
20 Geminorum	6.3	3.88	10.4	17 50.7	10 26.6	- 4 51.6	+0.2937	0.5980	0.0276	+53	- 1
21 Geminorum	6.5	3.88	10.4	17 51.0	10 26.9	- 4 51.3	+0.2884	0.5980	0.0276	+53	- 2
26 Geminorum	5.0	+3.82	-11.3	+17 44.2	14 31.2	- 0 56.4	+0.2739	0.5976	-0.0357	+51	- 3
W.B. (2) vi, 1630	6.2	3.72	12.9	17 53.4	22 36.2	+ 6 49.9	-0.2343	0.5965	0.0517	+21	-34
51 Geminorum	5.4	3.62	13.3	16 19.2	9 03.7	+11 07.1	+1.1048	0.5958	0.0603	+90	+47
λ Geminorum	3.6	3.60	13.8	16 42.7	4 58.5	-11 02.5	+0.5895	0.5952	0.0639	+77	+12
W.B. (2) vii, 685	5.6	3.53	14.9	17 17.2	10 32.6	- 5 41.2	-0.3798	0.5939	0.0744	+13	-45
68 Geminorum	5.0	+3.50	-14.6	+16 01.9	11 18.1	- 4 57.3	+0.8358	0.5937	-0.0758	+90	+26
1 Cancri	5.9	3.35	16.1	16 02.7	20 53.1	+ 4 15.8	+0.0127	0.5911	0.0929	+35	-23
B. A. C. 2649	6.3	3.36	16.4	16 46.5	21 30.3	+ 4 51.6	-0.7843	0.5909	0.0940	-11	-73
5 Cancri	6.4	3.34	16.6	16 43.1	22 44.0	+ 6 02.5	-0.8432	0.5905	0.0961	-15	-73
29 Cancri	5.9	3.13	17.2	14 31.6	10 01.0	- 7 06.0	+0.1843	0.5868	0.1144	+45	-16
B. A. C. 2872	6.8	+3.09	-17.1	+13 35.1	12 10.5	- 5 01.2	+0.8876	0.5861	-0.1177	+90	+25
<i>A</i> Cancri	5.6	3.02	17.3	13 01.5	16 08.8	- 1 11.7	+0.9755	0.5847	0.1237	+90	+30
<i>a</i> Cancri	4.3	2.91	17.5	12 13.7	22 36.4	+ 5 01.6	+0.9528	0.5823	0.1328	+90	+28
B. A. C. 3122	7.0	2.84	17.8	11 57.3	11 34.6	+ 9 39.4	+0.5770	0.5807	0.1391	+74	+ 3
ξ Leonis	5.2	2.69	18.2	11 43.5	12 55.3	- 5 10.7	-0.5682	0.5773	0.1505	+ 3	-67
<i>h</i> Leonis	5.4	+2.69	-17.6	+10 08.3	12 56.4	- 5 09.6	+1.0365	0.5773	-0.1506	+90	+30
<i>o</i> Leonis	3.8	2.62	17.8	10 19.7	16 55.0	- 1 19.5	+0.2369	0.5759	0.1548	+48	-17
B. A. C. 3398	6.0	2.53	17.6	9 23.3	23 34.3	+ 5 05.6	+0.1385	0.5737	0.1615	+42	-23
11 Sextantis	6.0	2.52	17.4	8 46.3	12 08.7	+ 5 48.4	+0.6437	0.5735	0.1621	+81	+ 4
π Leonis	5.0	2.51	17.4	8 30.3	1 13.7	+ 6 41.4	+0.7658	0.5732	0.1630	+90	+12
43 Leonis	6.5	+2.37	-16.9	+ 7 01.8	11 15.9	- 7 37.6	+0.5865	0.5700	-0.1712	+75	0
48 Leonis	5.2	2.30	16.9	7 26.9	16 29.6	- 2 34.9	-0.7439	0.5687	0.1747	- 8	-78
35 Sext. (1 st star)	6.0	2.26	16.1	5 15.1	20 18.2	+ 1 05.8	+0.8215	0.5677	0.1770	+90	+13
37 Sextantis	6.2	2.24	16.6	6 52.8	21 31.4	+ 2 16.4	-1.0522	0.5675	0.1777	-28	-83
<i>d</i> Leonis	5.0	2.17	15.5	4 08.0	13 40.8	+ 8 32.4	+0.5798	0.5660	0.1809	+74	- 1
B. A. C. 3836	7.2	+2.11	-14.8	+ 2 47.6	10 01.1	- 9 39.8	+0.8537	0.5648	-0.1832	+90	+14
75 Leonis	5.4	2.09	14.8	2 32.4	11 32.7	- 8 11.2	+0.8328	0.5646	0.1836	+90	+13
76 Leonis	6.3	2.09	14.6	2 10.7	12 17.1	- 7 28.3	+1.0661	0.5644	0.1838	+90	+30
79 Leonis	5.5	2.06	14.3	1 56.2	14 36.0	- 5 14.2	+0.8870	0.5640	0.1845	+90	+17
82 Leonis	6.9	2.07	14.9	3 49.9	15 19.7	- 4 32.0	-1.1825	0.5639	0.1847	-40	-86
83 Leonis	6.1	+2.00	-14.5	+ 3 32.3	15 51.4	- 4 01.4	-0.9804	0.5639	-0.1848	-23	-86
τ Leonis	5.1	2.04	14.6	+ 3 23.2	16 21.6	- 3 32.2	-0.9190	0.5638	0.1849	-18	-87
VENUS				- 1 33.3	14 19 42.9	- 1 06.5	-0.9476	0.5270	0.1739	-20	-90
θ Virginis	4.4	1.72	8.2	5 01.4	15 14 52.6	- 6 35.6	-0.8365	0.5617	0.1762	-14	-90
77 Virginis	7.0	1.69	6.5	7 07.6	16 1 34.7	+ 3 45.0	-0.5124	0.5623	0.1691	+ 4	-69
81 Virginis	7.0	+1.69	- 6.2	- 7 22.7	3 28.8	+ 5 35.3	-0.5711	0.5625	-0.1676	0	74

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

NOVEMBER.

THE STAR'S					AT CONJUNCTION IN R. A.							Limiting Parallels.	
Name.	Mag.	Red'ns from 1903.0.		Apparent Declination.	Washington Mean Time.	Hour Angle, <i>H</i>	<i>Y</i>	<i>x'</i>	<i>y'</i>	N.	S.		
		$\Delta\alpha$	$\Delta\delta$										
<i>m</i> Virginis	5.3	+1.69	- 5.8	- 8 12.9	16 5 18.8	+ 7 21.6	-0.0096	0.5626	-0.1662	+31	-34		
B. A. C. 4591	6.2	1.70	5.4	9 13.5	7 51.4	+ 9 49.0	+0.6188	0.5628	0.1641	+75	0		
W. B. xiii, 825	6.8	1.68	4.9	9 05.1	11 45.8	-10 24.6	-0.1604	0.5631	0.1607	+22	-43		
95 Virginis	5.7	1.64	4.3	8 51.1	16 44.0	- 5 36.5	-1.1918	0.5636	0.1560	-45	-90		
96 Virginis	6.5	1.67	- 4.0	9 52.6	17 45.7	- 4 36.9	-0.2845	0.5637	0.1550	+15	-51		
NEW MOON.													
B. A. C. 5839	6.0	+1.80	+ 8.1	-17 39.2	20 7 47.0	+ 6 28.1	-0.5115	0.5640	-0.0306	-10	-69		
B. A. C. 6060	6.5	1.89	10.0	18 46.9	21 0 12.6	- 1 39.5	+0.4363	0.5606	-0.0029	+43	-10		
Y Sagittarii	Var.	1.94	11.3	18 54.0	11 57.9	+ 9 42.3	+0.6477	0.5574	+0.0166	+61	+ 3		
B. A. C. 6287	6.0	1.96	11.8	18 47.2	16 04.0	-10 19.8	+0.6066	0.5562	0.0232	+58	+ 1		
B. A. C. 6292	7.5	+1.96	+11.7	-18 58.0	16 35.6	- 9 49.3	+0.8163	0.5560	+0.0241	+71	+14		
B. A. C. 6294	5.2	1.96	11.9	18 28.0	16 39.2	- 9 45.8	+0.2704	0.5560	0.0242	+33	-19		
ρ^1 Sagittarii	3.9	2.09	14.3	18 01.6	22 16 24.5	-10 46.9	+0.8084	0.5482	0.0606	+72	+13		
ν Sagittarii	4.7	2.07	14.8	16 08.0	16 28.0	-10 43.5	-1.2692	0.5482	0.0609	-68	-90		
ϵ^1 Sagittarii	5.6	2.13	15.5	16 30.7	23 1 36.8	- 1 52.1	-0.2379	0.5448	0.0739	+10	-49		
ϵ^2 Sagittarii	5.0	+2.14	+15.6	-16 20.8	2 29.3	- 1 01.3	-0.3538	0.5445	+0.0751	+ 3	-57		
B. A. C. 6746	5.5	2.13	15.8	15 41.4	2 59.8	- 0 31.8	-1.0399	0.5443	0.0758	-40	-90		
γ Sagittarii	5.0	2.18	16.3	15 44.7	10 01.5	+ 6 16.6	-0.4148	0.5418	0.0852	+ 1	-61		
B. A. C. 6992	6.2	2.25	17.3	15 05.2	21 17.7	- 6 48.2	-0.1003	0.5379	0.0995	+20	-40		
β Capricorni	3.4	2.26	17.3	15 05.0	21 24.7	- 6 41.4	-0.0917	0.5379	0.0997	+20	-40		
B. A. C. 7009	7.0	+2.26	+17.5	-14 33.8	22 37.7	- 5 30.7	+0.5451	0.5375	+0.1012	- 5	-72		
B. A. C. 7063	6.2	2.30	17.5	15 22.5	24 2 25.5	- 1 49.9	+0.7463	0.5362	0.1056	+75	+ 8		
B. A. C. 7087	6.2	2.30	18.0	14 03.0	4 00.0	- 0 18.2	-0.5522	0.5357	0.1074	- 4	-73		
τ^1 Capricorni	7.0	2.33	17.6	15 28.7	5 33.7	+ 1 12.5	+1.1974	0.5352	0.1092	+75	+45		
τ^2 Capricorni	5.3	2.33	17.7	15 17.5	6 31.8	+ 2 08.9	+1.0957	0.5349	0.1103	+75	+34		
B. A. C. 7221	6.3	+2.36	+18.8	-12 53.9	12 18.9	+ 7 45.4	-0.8945	0.5320	+0.1167	-24	-90		
8 Aquarii	6.8	2.39	18.8	13 26.0	16 58.9	-11 43.0	+0.2534	0.5318	0.1217	+43	-20		
9 Aquarii	7.0	2.41	18.7	13 54.3	17 35.7	-11 07.3	+0.8497	0.5316	0.1223	+76	+15		
ν Aquarii	4.6	2.42	19.5	11 45.6	21 55.4	- 6 55.5	-0.9869	0.5304	0.1266	-29	-90		
ϵ^1 Capricorni	5.2	2.57	20.7	9 31.3	25 16 09.5	+10 46.2	-0.9987	0.5264	0.1430	-28	-90		
ϵ^2 Capricorni	6.2	+2.58	+20.6	- 9 43.1	16 48.7	+11 24.3	-0.6885	0.5262	+0.1436	- 7	-87		
B. A. C. 7620	6.5	2.61	20.3	10 45.8	20 35.9	- 8 55.3	+1.0165	0.5256	0.1466	+79	+26		
36 Aquarii	6.3	2.69	21.1	8 39.4	26 4 51.6	- 0 54.2	-0.0752	0.5245	0.1526	+27	-39		
B. A. C. 7717	6.5	2.69	20.9	8 00.4	4 53.3	- 0 52.5	-0.7887	0.5245	0.1526	-12	-90		
θ Aquarii	4.3	2.72	21.2	8 15.6	8 42.7	+ 2 50.1	+0.0802	0.5241	0.1552	+36	-30		
ρ Aquarii	5.4	+2.73	+21.2	- 8 18.2	10 28.3	+ 4 32.7	+0.4005	0.5240	+0.1563	+60	-10		
B. A. C. 7793	7.5	2.74	21.7	6 43.5	11 06.7	+ 5 09.9	-1.2391	0.5239	0.1567	-49	-90		
B. A. C. 7804	6.1	2.75	21.4	7 40.7	12 13.4	+ 6 14.7	-0.0132	0.5238	0.1574	+31	-35		
W. B. xxii, 493	6.2	2.79	21.5	7 02.4	16 16.2	+10 10.4	-0.0700	0.5237	0.1599	+28	-38		
B. A. C. 7951 (mean)	6.7	2.86	21.9	4 43.6	27 0 57.2	- 5 23.8	-1.2110	0.5235	0.1645	-44	-90		
B. A. C. 7986	5.8	+2.91	+21.8	- 5 29.9	4 46.5	- 1 41.2	+0.2709	0.5236	+0.1663	+49	-19		
B. A. C. 7993	6.5	2.92	21.8	5 19.4	5 52.7	- 0 36.9	+0.2609	0.5238	0.1668	+48	-20		
B. A. C. 8017	6.1	2.94	21.7	5 13.7	8 05.4	+ 1 31.8	+0.5271	0.5239	0.1678	+68	- 5		
B. A. C. 8094	5.6	3.02	21.8	4 01.2	15 25.3	+ 8 38.9	+0.4427	0.5245	0.1706	+62	-10		
11 Piscium	6.5	3.09	22.1	2 19.2	22 38.6	- 8 20.5	-0.1745	0.5256	0.1729	+24	-44		
12 Piscium	6.8	+3.10	+22.3	- 1 33.8	22 40.5	- 8 18.7	-0.9941	0.5256	+0.1729	-24	-90		
13 Piscium	6.4	3.12	22.2	1 36.9	23 56.7	- 7 04.7	-0.7169	0.5258	0.1732	- 6	-90		
14 Piscium	5.9	3.13	22.0	1 46.6	28 1 04.4	- 5 58.9	-0.3445	0.5260	0.1735	+15	-55		
W. B. xxiii, 1069	6.9	3.27	21.4	- 0 48.8	14 17.1	+ 6 50.2	+0.9155	0.5290	0.1757	+89	+18		
44 Piscium	5.8	3.42	21.0	+ 1 24.5	29 3 18.9	- 4 31.5	+0.8022	0.5333	0.1759	+89	+11		
B. A. C. 221	5.7	+3.63	+19.7	+ 4 47.2	14 45.5	+ 6 34.1	-0.8205	0.5380	+0.1743	-12	-85		
B. A. C. 274	7.0	3.66	20.3	5 57.9	20 26.5	-11 55.4	-1.0900	0.5405	0.1728	-31	-84		
73 Piscium	6.4	3.67	19.7	5 08.5	22 55.2	- 9 31.3	+0.2163	0.5418	0.1720	+47	-21		
77 Piscium	6.1	3.66	19.4	4 23.8	23 23.1	- 9 04.4	+1.0895	0.5420	0.1719	+90	+31		
ϵ Piscium	5.7	3.68	19.3	5 08.5	30 0 38.5	- 7 51.2	+0.5115	0.5427	0.1714	+68	- 5		
88 Piscium	6.1	+3.73	+19.4	+ 6 29.3	3 42.1	- 4 53.4	-0.3969	0.5442	+0.1703	+12	-58		

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

NOVEMBER.

THE STAR'S					AT CONJUNCTION IN R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1903.0.		Apparent Declination.	Washington Mean Time.	Hour Angle, H	Y	x'	y'	N.	S.
		$\Delta\alpha$	$\Delta\delta$		d h m	h m					
B. A. C. 410	7.4	+3.81	+18.9	+ 6 54.6	30 7 40.5	- 1 02.5	-0.1710	0.5463	+0.1686	+25	-43
96 Piscium	6.6	3.82	18.4	6 47.9	10 36.8	+ 1 48.1	+0.4399	0.5480	0.1677	+62	- 8
o Piscium	4.4	+3.94	+17.7	+ 8 40.5	18 21.2	+ 9 17.5	-0.2644	0.5524	+0.1627	+19	-47

DECEMBER.

ξ Arietis	5.4	+4.13	+14.4	+10 10.5	1. 12 33.2	+ 2 53.1	+0.9986	0.5638	+0.1484	+90	+28
B. A. C. 755	7.0	4.15	14.2	10 08.0	13 26.0	+ 3 44.1	+1.1727	0.5645	0.1475	+90	+44
31 Arietis	5.6	4.25	13.6	12 01.8	17 50.4	+ 7 59.4	-0.1625	0.5673	0.1432	+25	-39
38 Arietis	5.2	4.27	12.8	12 02.5	21 33.5	+11 34.8	+0.3515	0.5697	0.1392	+56	-10
W. B. ii, 1033	5.9	+4.37	+10.7	+12 49.0	2 6 58.0	- 3 20.5	+0.8052	0.5759	+0.1280	+90	+18
B. A. C. 1119	6.4	4.56	7.5	16 13.4	21 03.0	+10 14.0	-1.0250	0.5848	0.1084	-28	-74
B. A. C. 1206	6.0	4.62	6.0	17 02.4	3 2 47.4	- 8 14.5	-1.2595	0.5884	0.0993	-56	-73
B. A. C. 1272	6.3	4.64	4.3	17 04.9	8 55.9	- 2 19.7	-0.7204	0.5919	0.0891	- 7	-73
W. B. (2) iv, 59	6.4	4.64	3.8	17 01.7	10 47.5	- 0 32.3	-0.5034	0.5930	0.0859	+ 6	-55
55 Tauri	7.3	+4.64	+ 2.8	+16 17.4	13 49.6	+ 2 21.9	+0.5006	0.5946	+0.0806	+68	+ 5
δ^1 Tauri	4.0	4.67	2.6	17 19.0	15 02.6	+ 3 33.1	-0.4443	0.5952	0.0784	+ 9	-50
63 Tauri	5.6	4.65	2.5	16 33.1	15 15.1	+ 3 45.1	+0.3471	0.5953	0.0780	+57	- 3
δ^2 Tauri	4.7	4.67	2.4	17 13.2	15 31.1	+ 4 00.4	-0.3100	0.5954	0.0775	+17	-40
δ^3 Tauri	4.2	4.69	2.3	17 42.4	16 04.6	+ 4 32.6	-0.7605	0.5960	0.0765	-10	-72
70 Tauri	6.3	+4.62	+ 2.2	+15 43.2	16 09.6	+ 4 37.5	+1.2603	0.5960	+0.0763	+85	+65
75 Tauri	5.3	4.63	2.0	16 08.6	17 18.3	+ 5 43.5	+0.9167	0.5965	0.0742	+90	+31
B. A. C. 1391	4.9	4.63	1.7	15 59.0	18 09.7	+ 6 33.0	+1.1413	0.5967	0.0727	+90	+50
B. A. C. 1394	7.5	4.63	1.6	15 56.4	18 14.9	+ 6 38.0	+1.1924	0.5968	0.0725	+90	+55
B. A. C. 1406	7.5	4.64	1.2	16 07.1	19 24.5	+ 7 44.9	+1.0927	0.5976	0.0703	+90	+45
α Tauri	1.0	+4.65	+ 0.9	+16 18.9	20 19.6	+ 8 37.9	+0.9580	0.5978	+0.0686	+90	+35
B. A. C. 1468	6.5	4.73	- 0.2	18 33.6	4 20 27.6	-11 23.7	-1.0449	0.5996	0.0607	-31	-71
i Tauri	5.1	4.74	0.8	18 40.5	2 30.0	- 9 26.1	-1.0403	0.6005	0.0568	-30	-71
B. A. C. 1526	5.8	4.67	1.4	17 00.1	4 55.7	- 7 06.0	+0.7811	0.6015	0.0520	+90	+25
m Tauri	5.1	4.76	2.6	18 30.9	8 53.5	- 3 17.5	-0.5543	0.6033	0.0441	+ 2	-55
111 Tauri	5.2	+4.69	- 4.6	+17 17.5	15 38.2	+ 3 11.3	+0.9259	0.6051	+0.0303	+90	+36
115 Tauri	5.4	4.69	5.0	17 52.7	16 43.2	+ 4 13.6	+0.3687	0.6054	0.0280	+58	+ 3
117 Tauri	6.3	4.66	5.0	17 09.4	17 04.2	+ 4 33.6	+1.1028	0.6055	0.0273	+90	+50
W. B. (2) v, 606	7.0	4.70	5.2	18 17.1	17 33.7	+ 5 02.2	-0.0183	0.6056	0.0263	+28	-19
119 Tauri	4.6	4.70	5.6	18 31.2	18 41.7	+ 6 07.5	-0.2258	0.6059	0.0239	+21	-30
120 Tauri	5.3	+4.70	- 5.7	+18 28.2	19 12.8	+ 6 37.4	-0.1626	0.6060	+0.0228	+25	-26
B. A. C. 1796	7.5	4.70	6.8	18 56.3	22 43.2	+ 9 59.4	-0.5649	0.6068	0.0154	+ 2	-54
127 Tauri	6.3	4.70	6.8	18 55.9	22 53.0	+10 08.8	-0.5557	0.6068	0.0150	+ 2	-53
130 Tauri	5.5	4.69	7.2	17 41.5	5 0 41.0	+11 52.5	+0.7112	0.6071	+0.0112	+90	+24
χ^3 Orionis	5.1	4.69	9.1	19 41.4	6 55.0	- 6 08.4	-1.2621	0.6080	-0.0020	-62	-70
71 Orionis	5.1	+4.64	-10.5	+19 11.2	11 22.5	- 1 51.5	-0.7884	0.6083	-0.0116	-12	-71
20 Geminorum	6.3	4.56	12.1	17 50.7	18 12.0	+ 4 41.6	+0.4245	0.6082	0.0262	+62	+ 6
21 Geminorum	6.5	4.56	12.1	17 51.0	18 12.3	+ 4 41.9	+0.4194	0.6082	0.0262	+62	+ 6
22 Geminorum	7.2	4.60	12.5	19 30.0	19 05.6	+ 5 33.0	-1.2544	0.6082	0.0281	-59	-70
26 Geminorum	5.0	4.52	13.1	17 44.2	22 08.8	+ 8 28.9	+0.4121	0.6080	0.0346	+61	+ 4
W. B. (2) vi, 1630	6.2	+4.45	-15.0	+17 53.4	6 5 58.4	- 8 00.3	-0.0741	0.6070	-0.0509	+30	-24
2 Geminorum	3.6	4.36	16.2	16 42.7	12 08.5	- 2 01.0	+0.7475	0.6057	0.0636	+90	+21
W. B. (2) vii, 685	5.6	4.31	17.5	17 17.3	17 32.0	+ 3 06.8	-0.1995	0.6042	0.0742	+23	-33
68 Geminorum	5.0	4.27	17.4	16 01.8	18 16.1	+ 3 48.2	+1.0003	0.6040	0.0756	+90	+38
f Geminorum	5.2	4.29	18.2	17 53.4	20 33.7	+ 6 00.4	-1.0345	0.6033	0.0800	-29	-72
1 Cancri	5.9	+4.16	-19.2	+16 02.6	7 3 33.3	-11 16.5	+0.2027	0.6010	-0.0931	+47	-13
B. A. C. 2649	6.3	4.17	19.5	16 46.5	4 09.3	-10 41.9	-0.5829	0.6008	0.0942	+ 1	-62
5 Cancri	6.4	4.15	19.7	16 43.0	5 20.9	- 9 33.0	-0.6395	0.6003	0.0964	- 2	-67
29 Cancri	5.9	3.97	20.9	14 31.6	16 18.3	+ 0 58.9	+0.3893	0.5957	0.1151	+59	- 5
B. A. C. 2872	6.8	3.93	20.9	13 35.0	18 24.2	+ 3 00.0	+1.0868	0.5948	0.1184	+90	+40
A' Cancri	5.6	+3.87	-21.2	+13 01.4	22 16.1	+ 6 43.1	+1.1786	0.5930	-0.1244	+90	+48

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

DECEMBER.

THE STAR'S					AT CONJUNCTION IN R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1903.0.		Apparent Declination.	Washington Mean Time.	Hour Angle. <i>H</i>	<i>Y</i>	<i>x'</i>	<i>y'</i>	N.	S.
		$\Delta\alpha$	$\Delta\delta$		d h m	h m					
α Cancr	4.3	+3.77	-21.8	+12 13.6	8 4 33.8	-11 13.6	+1.1638	0.5900	-0.1337	+90	+45
B. A. C. 3122	7.0	3.70	22.1	11 57.2	9 15.2	-6 42.7	+0.7962	0.5877	0.1400	+90	+16
ξ Leonis	5.2	3.55	22.8	11 43.4	18 33.9	+2 15.2	-0.3295	0.5831	0.1514	+16	-49
δ Leonis	5.4	3.55	22.3	10 08.3	18 34.9	+2 16.3	+1.2612	0.5831	0.1515	+90	+55
η Leonis	3.8	3.49	22.6	10 19.6	22 29.0	+6 01.8	+0.4716	0.5812	0.1558	+65	-5
B. A. C. 3398	6.0	+3.39	-22.5	+9 23.2	9 5 01.6	-11 39.8	+0.3783	0.5778	-0.1623	+58	-10
π Sextantis	6.0	3.39	22.4	8 46.3	5 45.4	-10 57.6	+0.8801	0.5778	0.1630	+90	+19
π Leonis	5.0	3.37	22.3	8 30.2	6 39.6	-10 05.3	+1.0022	0.5773	0.1639	+90	+28
43 Leonis	6.5	3.23	22.1	7 01.7	16 34.1	-0 32.1	+0.8288	0.5729	0.1719	+90	+15
48 Leonis	5.2	3.16	22.0	7 26.8	21 45.0	+4 27.9	-0.4943	0.5706	0.1754	+7	-64
35 Sext. (1 st star)	6.0	+3.12	-21.4	+5 15.0	10 1 32.0	+8 06.8	+1.0649	0.5691	-0.1776	+90	+30
37 Sextantis	6.2	3.10	21.9	6 52.7	2 44.7	+9 17.1	-0.8024	0.5686	0.1783	-12	-83
δ Leonis	5.0	3.02	20.8	4 08.0	9 12.4	-8 28.7	+0.8245	0.5662	0.1812	+90	+13
B. A. C. 3836	7.2	2.95	20.1	2 47.5	15 12.1	-2 41.4	+1.0974	0.5642	0.1834	+90	+31
75 Leonis	5.4	2.93	20.1	2 32.3	16 43.7	-1 12.9	+1.0762	0.5637	0.1839	+90	+30
76 Leonis	6.3	+2.92	-19.8	+2 10.6	17 28.1	-0 30.0	+1.3091	0.5637	-0.1841	+85	+58
79 Leonis	5.5	2.89	19.5	1 56.1	19 47.1	+1 44.3	+1.1299	0.5628	0.1846	+90	+36
82 Leonis	6.9	2.87	20.1	3 49.8	20 20.9	+2 26.6	-0.9393	0.5625	0.1848	-20	-86
83 Leonis	6.1	2.82	20.1	3 32.2	21 02.8	+2 57.4	-0.7378	0.5624	0.1849	-7	-84
τ Leonis	5.1	2.86	19.9	+3 23.1	21 32.8	+3 26.3	-0.6760	0.5622	0.1850	-3	-84
θ Virginis	4.4	+2.48	-12.7	-5 01.5	12 20 34.5	+0 53.8	-0.6459	0.5554	-0.1757	-2	-81
η Virginis	6.1	2.37	11.1	5 58.4	13 6 05.6	+10 06.0	-1.3076	0.5555	0.1697	-60	-84
77 Virginis	7.0	2.38	10.6	7 07.6	7 28.7	+11 26.3	-0.3372	0.5556	0.1687	+14	-55
81 Virginis	7.0	2.36	10.3	7 22.8	9 25.0	-10 41.2	-0.3994	0.5556	0.1673	+10	-59
m Virginis	5.3	2.35	9.8	8 13.0	11 17.2	-8 52.7	+0.1628	0.5557	0.1659	+41	-25
B. A. C. 4591	6.2	+2.36	-9.2	-9 13.6	13 52.9	-6 22.1	+0.7913	0.5558	-0.1638	+81	+10
W. B. xiii, 825	6.8	2.32	8.6	9 05.2	17 52.2	-2 30.8	-0.0010	0.5560	0.1605	+31	-34
95 Virginis	5.7	2.28	8.0	8 51.2	22 56.6	+2 23.7	-1.0496	0.5565	0.1559	-32	-90
96 Virginis	6.5	2.29	7.5	9 52.6	23 59.6	+3 24.4	-0.1373	0.5566	0.1549	-23	-42
97 Virginis	7.0	2.27	7.4	9 26.8	14 1 38.5	+5 00.3	-0.8443	0.5568	0.1533	+17	-90
κ Virginis	4.3	+2.27	-7.1	-9 49.5	1 47.7	+5 09.0	-0.4707	0.5568	-0.1532	+5	-65
VENUS				11 01.2	6 26.3	+9 38.3	+0.0805	0.5128	0.1338	+34	-29
2 Libræ	6.3	2.26	6.2	11 16.4	6 39.7	+9 51.4	+0.3190	0.5572	0.1483	+49	-17
B. A. C. 4772	6.6	2.26	6.1	11 13.9	7 14.8	+10 25.3	+0.1888	0.5573	0.1477	+41	-24
B. A. C. 4828	6.0	2.18	4.7	11 53.7	12 58.5	-8 02.5	+0.0596	0.5580	0.1415	+33	-31
μ Libræ	5.4	+2.23	-3.8	-13 44.8	18 35.9	-2 36.2	+1.2389	0.5586	-0.1351	+76	+51
σ Libræ	6.0	2.17	1.2	15 12.0	15 9 09.5	+11 28.1	+0.9502	0.5603	0.1167	+75	+22
σ Libræ	6.3	2.16	1.2	14 47.3	10 05.2	-11 38.1	+0.4057	0.5604	0.1154	+51	-11
γ Libræ	4.0	2.12	-0.3	14 28.0	15 49.0	-6 05.8	-0.5764	0.5610	0.1075	-6	-75
B. A. C. 5188	6.6	2.16	+0.2	14 43.9	19 25.6	-2 36.5	-0.6726	0.5614	0.1024	-12	-87
η Libræ	5.5	+2.15	+0.4	-15 21.8	19 43.1	-2 19.6	-0.0279	0.5614	-0.1020	+24	-36
θ Libræ	4.3	2.13	1.4	16 26.7	16 0 09.2	+1 57.5	+0.6884	0.5618	0.0955	+71	+5
49 Libræ	5.6	2.06	1.4	16 14.8	3 09.9	+4 52.1	+0.1971	0.5625	-0.0912	+35	-23
NEW MOON.											
ϵ Sagittarii	5.6	+2.02	+14.7	-16 30.7	20 9 15.3	+7 34.0	-0.4232	0.5473	+0.0724	-1	-62
ϵ Sagittarii	5.0	2.02	14.9	16 20.9	10 07.4	+8 24.5	-0.5413	0.5470	0.0739	-7	-72
B. A. C. 6746	5.5	2.01	15.0	15 41.4	10 37.9	+8 53.9	-1.2289	0.5469	0.0743	-59	-90
δ Sagittarii	5.0	2.03	15.5	15 44.7	17 37.6	-8 19.6	-0.6166	0.5445	0.0839	-10	-80
B. A. C. 6992	6.2	2.07	16.4	15 05.2	21 4 50.6	+2 32.4	-0.3222	0.5405	0.0984	+8	-54
β Capricorni	3.4	+2.07	+16.4	-15 05.0	4 57.4	+2 39.0	-0.3142	0.5405	+0.0985	+8	-54
B. A. C. 7009	7.0	2.07	16.5	14 33.8	6 10.2	+3 49.6	-0.7699	0.5401	0.1000	-18	-90
B. A. C. 7063	6.2	2.09	16.6	15 22.6	9 56.7	+7 29.0	+0.5161	0.5387	0.1045	+59	-5
B. A. C. 7087	6.2	2.09	16.9	14 03.0	11 31.1	+9 00.6	-0.7860	0.5382	0.1064	-18	-90
τ Capricorni	7.0	2.11	16.6	15 28.7	13 04.4	+10 30.9	+0.9630	0.5376	0.1082	+75	+23
τ Capricorni	5.3	+2.11	+16.8	-15 17.5	14 02.2	+11 27.0	+0.8596	0.5373	+0.1093	+75	+16

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

DECEMBER.

THE STAR'S					AT CONJUNCTION IN R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1903.0.		Apparent Declination.	Washington Mean Time.	Hour Angle, H	Y	x'	y'	N.	S.
		$\Delta\alpha$	$\Delta\delta$		d h m	h m					
B. A. C. 7221	6.3	+2.13	+17.5	-12 54.0	21 19 47.9	- 6 57.8	-1.1428	0.5353	+0.1158	-44	-90
8 Aquarii	6.8	2.14	17.6	13 26.0	22 0 27.1	- 2 27.1	+0.0002	0.5337	0.1207	+28	-34
9 Aquarii	7.0	2.14	17.5	13 54.3	1 03.7	- 1 51.6	+0.5964	0.5336	0.1214	+67	- 1
v Aquarii	4.6	2.17	18.1	11 45.6	5 22.9	+ 2 19.8	-1.2497	0.5322	0.1258	-56	-90
c Capricorni	5.2	2.28	19.1	9 31.4	23 36.1	- 3 59.6	-1.2862	0.5269	0.1422	-59	-90
α Capricorni	6.2	+2.29	+19.0	- 9 43.1	23 0 15.4	- 3 21.5	-0.9757	0.5268	+0.1427	-26	-90
B. A. C. 7620	6.5	2.32	18.7	10 45.8	4 03.0	+ 0 19.4	+0.7310	0.5258	0.1457	+79	+ 6
36 Aquarii	6.3	2.38	19.4	8 39.4	12 20.2	+ 8 22.0	-0.3726	0.5241	0.1517	+11	-57
B. A. C. 7717	6.5	2.38	19.0	8 00.4	12 22.1	+ 8 23.9	-1.0888	0.5241	0.1517	-34	-90
θ Aquarii	4.3	2.41	19.6	8 15.7	16 12.4	-11 52.5	-0.2197	0.5234	0.1543	+20	-47
ρ Aquarii	5.4	+2.42	+19.4	- 8 18.2	17 58.6	-10 09.3	+0.1007	0.5231	+0.1554	+38	-29
B. A. C. 7804	6.1	2.43	19.6	7 40.7	19 44.2	- 8 26.9	-0.3164	0.5228	0.1505	+15	-53
W. B. xxii. 493	6.2	2.47	19.7	7 02.5	23 48.6	- 4 29.5	-0.3760	0.5222	0.1588	+12	-58
67 Aquarii	6.2	2.52	19.4	7 27.9	24 6 06.6	+ 1 37.6	+1.1002	0.5214	0.1622	+83	+32
B. A. C. 7986	5.8	2.58	19.8	5 30.0	12 25.5	+ 7 45.5	-0.0400	0.5210	0.1652	+31	-36
B. A. C. 7993	6.5	+2.59	+19.8	- 5 19.4	13 32.5	+ 8 50.6	-0.0500	0.5210	+0.1657	+30	-37
B. A. C. 8017	6.1	2.61	19.8	5 13.7	15 46.8	+11 01.1	+0.2172	0.5210	0.1666	+46	-22
B. A. C. 8094	5.6	2.69	19.8	4 01.2	23 12.3	- 5 46.3	+0.1311	0.5210	0.1693	+41	-27
11 Piscium	6.5	2.77	20.0	2 19.2	25 6 31.9	+ 1 20.6	-0.4912	0.5213	0.1710	+ 7	-66
12 Piscium	6.8	2.77	20.2	1 33.8	6 33.9	+ 1 22.5	-1.3165	0.5213	0.1714	-59	-85
13 Piscium	6.4	+2.79	+20.2	- 1 37.0	7 51.3	+ 2 37.7	-1.0376	0.5214	+0.1718	-27	-90
14 Piscium	5.9	2.80	20.0	1 46.7	9 00.2	+ 3 44.6	-0.6620	0.5215	0.1720	- 1	-83
W. B. xxiii. 1069	6.9	2.95	19.4	- 0 48.9	22 27.2	- 7 11.9	+0.6124	0.5235	0.1741	+78	0
44 Piscium	5.8	3.11	19.0	+ 1 24.5	26 11 45.5	+ 5 43.0	+0.5064	0.5267	0.1743	+67	- 6
B. A. C. 221	5.7	3.34	17.7	4 47.2	23 28.1	- 6 55.2	-1.1247	0.5306	0.1727	-34	-85
B. A. C. 237	6.7	+3.29	+18.0	+ 2 51.8	27 1 00.0	- 5 26.2	+1.2210	0.5312	+0.1724	+90	+45
73 Piscium	6.4	3.40	17.9	5 08.5	7 49.9	+ 1 11.3	-0.0651	0.5340	0.1706	+30	-37
77 Piscium	6.1	3.39	17.5	4 23.8	8 18.5	+ 1 39.0	+0.8173	0.5343	0.1704	+90	-12
c Piscium	5.7	3.40	17.5	5 08.5	9 35.8	+ 2 54.0	+0.2354	0.5349	0.1700	+48	-20
88 Piscium	6.1	3.48	17.7	6 29.2	12 44.1	+ 5 56.5	-0.6779	0.5363	0.1689	- 3	-81
B. A. C. 410	7.4	+3.55	+17.3	+ 6 54.6	16 48.4	+ 9 53.3	-0.4447	0.5383	+0.1673	+10	-61
96 Piscium	6.6	3.58	16.7	6 47.9	19 49.1	-11 11.6	+0.1767	0.5399	0.1659	+45	-23
o Piscium	4.4	3.72	16.4	8 40.4	28 3 45.5	- 3 30.2	-0.5219	0.5443	0.1617	+ 6	-65
ξ Arietis	5.4	3.98	13.1	10 10.5	22 24.2	- 9 27.7	+0.7863	0.5560	0.1481	+90	+14
B. A. C. 755	7.0	3.99	12.9	10 07.9	23 18.2	- 8 35.6	+0.9533	0.5566	0.1473	+90	+26
31 Arietis	5.6	+4.12	+12.5	+12 01.8	29 3 48.5	- 4 14.4	-0.3733	0.5597	+0.1431	+13	-52
38 Arietis	5.2	4.15	11.6	12 02.5	7 36.5	- 0 34.1	+0.1527	0.5624	0.1393	+43	-20
W. B. ii. 1033	5.9	4.28	9.7	12 49.0	17 12.4	+ 8 42.0	+0.6302	0.5697	0.1288	+81	+ 7
B. A. C. 1119	6.4	4.55	7.0	16 13.4	30 7 31.1	- 1 29.9	-1.1747	0.5797	0.1097	-42	-74
B. A. C. 1272	6.3	4.70	3.8	17 04.9	19 32.3	+10 04.8	-0.8366	0.5883	0.0910	-15	-73
W. B. (2) v. 59	6.4	+4.71	+ 3.2	+17 01.7	21 24.8	+11 53.1	-0.6144	0.5895	+0.0879	- 1	-64
55 Tauri	7.3	4.69	2.2	16 17.4	31 0 28.2	- 9 10.3	+0.3989	0.5917	0.0827	+60	- 1
δ Tauri	4.0	4.77	2.1	17 18.9	1 41.7	- 7 59.6	-0.5438	0.5923	0.0805	+ 3	-58
63 Tauri	5.6	4.75	1.9	16 33.1	1 54.3	- 7 47.5	+0.2492	0.5925	0.0801	+49	- 9
δ Tauri	4.7	4.77	1.9	17 13.2	2 10.4	- 7 32.0	-0.4080	0.5927	0.0797	+11	-47
β Tauri	4.2	+4.79	+ 1.8	+17 42.4	2 44.1	- 6 59.6	-0.8574	0.5931	+0.0787	-16	-72
70 Tauri	6.3	4.72	1.4	15 43.2	2 49.1	- 6 54.8	+1.1650	0.5931	0.0785	+90	+52
75 Tauri	5.3	4.74	1.2	16 08.6	3 58.1	- 5 48.4	+0.8240	0.5939	0.0765	+90	+25
B. A. C. 1391	4.9	4.75	0.9	15 59.0	4 49.8	- 4 58.7	+1.0509	0.5944	0.0749	+90	+41
B. A. C. 1394	7.5	4.74	0.8	15 56.4	4 55.1	- 4 53.6	+1.1022	0.5945	0.0748	+90	+46
B. A. C. 1406	7.5	+4.76	+ 0.5	+16 07.1	6 05.0	- 3 46.4	+1.0054	0.5952	+0.0726	+90	+38
a Tauri	1.0	4.77	+ 0.1	16 18.9	7 00.3	- 2 53.1	+0.8730	0.5958	0.0710	+90	+28
B. A. C. 1468	6.5	4.88	- 0.5	18 33.6	11 09.0	+ 1 05.9	-1.1178	0.5984	0.0632	-37	-71
i Tauri	5.1	4.91	1.2	18 40.5	13 11.5	+ 3 03.7	-1.1072	0.5995	0.0593	-36	-71
B. A. C. 1526	5.8	+4.86	- 2.1	+17 00.0	15 37.3	+ 5 23.8	+0.7180	0.6009	+0.0546	+90	+20

OCCULTATIONS VISIBLE AT WASHINGTON DURING THE YEAR 1903.

Date.	THE STAR'S		IMMERSION.				EMERSION.				Duration of Oc- cultation.	
			Washington,		Angle from		Washington,		Angle from			
	Name.	Mag.	Sidereal Time.	Mean Time.	North Point.	Vertex.	Sidereal Time.	Mean Time.	North Point.	Vertex.		
			h m	h m	°	°	h m	h m	°	°	h m	
Jan.	4	12 Piscium	6.8	3 26	8 32	89	42	4 28	9 34	227	177	1 02
	6	ζ Piscium	5.4	6 49	11 46	127	75	7 24	12 22	204	152	0 36
	9	B. A. C. 1272	6.3	9 50	14 35	27	334	10 17	15 01	329	277	0 26
	12	λ Geminorum	3.6	9 22	13 55	139	94	10 19	14 53	250	198	0 58
	21	ζ Libræ	6.2	10 13	14 11	144	193	11 05	15 03	252	297	0 52
	21	ζ Libræ	5.8	11 46	15 44	52	84	12 31	16 29	345	13	0 45
	21	ζ Libræ	5.4	12 43	16 41	92	125	13 04	18 02	306	325	0 21
Feb.	2	B. A. C. 221	5.7	0 41	3 54	56	56	2 07	5 19	250	224	1 25
	7	W.B.(2), v, 606	7.0	1 50	4 43	63	118	2 57	5 50	282	331	1 07
	7	119 Tauri	4.6	3 41	6 34	21	63	4 15	7 08	329	3	0 34
	7	120 Tauri	5.3	4 10	7 03	47	83	5 13	8 05	306	313	1 02
	8	20 Geminorum	6.3	2 09	4 58	100	155	3 14	6 03	257	309	1 05
	8	21 Geminorum	6.5	2 09	4 58	89	144	3 15	6 03	258	310	1 05
	8	26 Geminorum	5.0	7 33	10 21	102	75	8 50	11 37	277	231	1 16
	10	B. A. C. 2872 †	6.8	1 32	4 12	110	164	2 22	5 03	265	317	0 51
	10	A¹ Cancri	5.6	5 56	8 37	152	198	6 46	9 26	236	275	0 49
	10	60 Cancri	5.7	12 59	15 38	139	87	13 51	16 30	260	207	0 52
	14	B. A. C. 4200 †	5.7	6 23	8 47	165	216	6 55	9 19	235	285	0 32
Mar.	6	115 Tauri	5.4	11 44	12 49	81	28	12 34	13 39	287	232	0 50
	8	λ Geminorum	3.6	6 56	7 54	112	122	8 16	9 13	271	240	1 19
	13	B. A. C. 4134	6.0	16 19	16 55	99	52	17 20	17 57	300	250	1 02
	13	B. A. C. 4135	6.0	16 20	16 57	98	51	17 21	17 58	301	251	1 01
Apr.	4	51 Geminorum *	5.4	14 04	13 15	133	79	14 46	13 56	248	194	0 41
	6	α Cancri	4.3	8 25	7 28	92	104	9 42	8 45	309	290	1 17
	6	κ Cancri	5.0	14 09	13 12	156	104	14 48	13 50	241	189	0 38
	10	B. A. C. 4294	6.1	16 42	15 29	92	47	17 44	16 30	305	255	1 01
	15	29 Ophiuchi	6.5	12 19	10 47	109	156	13 30	11 57	273	312	1 10
	30	130 Tauri	5.5	11 13	8 42	141	87	11 52	9 21	231	177	0 39
May	1	26 Geminorum	5.0	8 10	5 35	59	18	9 07	6 32	322	273	0 57
	3	A¹ Cancri	5.6	9 40	6 57	76	52	10 44	8 01	325	284	1 04
	3	A² Cancri	5.8	12 07	9 24	155	104	12 55	10 11	246	193	0 47
	3	60 Cancri *	5.7	15 57	13 13	100	47	16 45	14 01	290	238	0 48
	7	B. A. C. 4200	5.7	16 18	13 18	78	32	17 14	14 14	321	272	0 56
	7	B. A. C. 4225 †	6.3	18 17	15 17	105	54	19 13	16 13	287	237	0 56
	14	B. A. C. 6287	6.0	16 57	13 30	31	50	17 49	14 22	324	332	0 52
	14	B. A. C. 6292	7.5	17 25	13 58	83	96	19 00	15 32	268	260	1 34
	17	8 Aquarii	6.8	18 28	14 49	75	107	19 59	16 19	250	263	1 30
	19	W. B. xxii, 493	6.2	16 53	13 06	62	113	17 58	14 10	264	312	1 04
	29	68 Geminorum †	5.0	14 22	9 56	95	51	15 10	10 44	289	235	0 48
	30	B. A. C. 2872	6.8	14 42	10 12	61	9	15 18	10 48	330	277	0 36
	31	λ Leonis	5.4	15 19	10 45	43	352	15 42	11 08	353	301	0 23
June	3	W. B. xii, 69	7.3	16 26	11 40	46	358	16 53	12 08	354	303	0 28
	7	ζ Libræ	5.8	12 50	7 49	160	193	13 40	8 39	238	261	0 50
	8	χ Ophiuchi	5.0	15 39	10 33	104	114	17 11	12 05	276	265	1 32
	15	θ Aquarii	4.3	19 00	13 27	35	75	20 08	14 35	283	313	1 08
	15	ρ Aquarii	5.4	21 30	15 56	133	145	22 01	16 28	174	177	0 32
	16	B. A. C. 7993 *	7.5	15 33	9 57	98	146	16 25	10 48	232	283	0 51

NOTE.—The angles of position are counted from the north point and vertex of the Moon's limb, toward the east.

* Whole occultation below the horizon of Washington.

† Immersion below the horizon of Washington.

‡ Emersion below the horizon of Washington.

OCCULTATIONS VISIBLE AT WASHINGTON DURING THE YEAR 1903.

Date.	THE STAR'S		IMMERSSION.				EMERISION.				Duration of Oc- cultation.
			Washington,		Angle from		Washington,		Angle from		
	Name.	Mag.	Sidereal Time.	Mean Time.	North Point.	Vertex.	Sidereal Time.	Mean Time.	North Point.	Vertex.	
			h m	h m	°	°	h m	h m	°	°	h m
July 6	29 Ophiuchi	6.5	15 34	8 39	65	83	17 0	10 04	314	313	1 25
10	B. A. C. 7063	6.2	21 59	14 47	120	97	23 01	15 49	198	165	1 02
16	e Piscium	5.7	18 39	11 04	101	153	19 29	11 54	220	271	0 50
Aug. 4	B. A. C. 6287	6.0	17 57	9 07	18	25	18 34	9 43	334	333	0 36
4	B. A. C. 6292	7.5	18 16	9 26	78	81	19 50	11 00	270	251	1 34
5	p Sagittarii	3.9	18 29	9 35	85	96	20 04	11 10	254	243	1 35
7	9 Aquarii	7.0	20 14	11 12	123	133	21 10	12 07	196	191	0 55
10	B. A. C. 8094 †	5.6	16 42	7 28	43	93	17 32	8 19	284	335	0 51
14	38 Arietis	5.2	1 30	16 00	81	108	2 54	17 24	237	232	1 24
16	75 Tauri	5.3	22 00	12 22	149	202	22 18	12 40	187	239	0 18
19	68 Geminorum *	5.0	23 43	13 53	140	194	0 15	14 25	225	279	0 32
31	Y Sagittarii	Var.	23 10	12 34	119	71	0 00	13 23	222	170	0 49
Sept. 5	p Aquarii	5.4	20 50	9 54	39	61	22 11	11 15	271	273	1 21
6	B. A. C. 8017	6.1	17 11	6 12	50	101	18 10	7 10	276	324	0 58
6	B. A. C. 8094	5.6	3 16	16 14	135	89	3 41	16 40	180	132	0 26
9	96 Piscium	6.6	20 13	9 01	10	61	20 44	9 32	309	0	0 31
12	55 Tauri	7.3	2 54	15 30	82	115	4 19	16 54	253	252	1 24
12	63 Tauri	5.6	5 15	17 50	62	35	6 34	19 08	283	237	1 18
15	λ Geminorum	3.6	3 39	16 02	112	125	4 47	17 10	254	327	1 08
27	B. A. C. 6060	6.5	19 43	7 21	45	20	20 49	8 26	304	268	1 05
Oct. 2	36 Aquarii	6.3	2 29	13 46	13	326	3 07	14 24	303	254	0 38
3	B. A. C. 7986	5.8	1 12	12 26	72	39	2 29	13 42	238	195	1 16
3	B. A. C. 7993	6.6	2 39	13 51	81	44	3 42	14 55	227	178	1 04
5	44 Piscium	5.8	21 11	8 17	116	159	22 00	9 06	194	229	0 49
6	96 Piscium	6.6	6 53	17 53	115	64	7 38	18 38	215	164	0 45
10	B. A. C. 1526	5.8	1 27	12 12	118	171	2 24	13 09	219	267	0 57
15	11 Sextantis	6.0	6 53	17 18	134	180	8 00	18 25	264	300	1 07
25	B. A. C. 6287	6.0	22 34	8 21	105	61	23 35	9 22	234	184	1 01
25	B. A. C. 6294	5.2	23 25	9 12	41	352	0 14	10 01	299	247	0 49
28	8 Aquarii	6.8	0 04	9 39	39	1	1 14	10 48	268	223	1 09
31	B. A. C. 8094	5.6	20 06	5 30	28	69	21 13	6 36	285	315	1 06
Nov. 2	73 Piscium	6.4	5 06	14 20	69	20	6 12	15 26	255	204	1 06
2	e Piscium	5.7	7 09	16 23	143	92	7 30	16 44	286	235	0 21
4	38 Arietis	5.2	2 17	11 24	65	75	3 41	12 48	255	231	1 24
6	75 Tauri	5.3	21 30	6 30	115	169	22 12	7 12	221	274	0 42
7	130 Tauri	5.5	7 57	16 51	145	99	8 43	17 37	222	170	0 46
11	o Leonis	3.8	6 55	15 34	77	33	8 02	16 40	321	353	1 06
26	p Aquarii	5.4	3 48	11 29	113	62	4 47	12 27	286	236	0 58
27	B. A. C. 8017	6.1	0 41	8 18	63	37	2 03	9 39	244	204	1 21
30	96 Piscium	6.6	3 28	10 52	78	41	4 45	12 09	240	193	1 17
Dec. 2	W. B. ii, 1033	5.9	21 52	5 09	90	143	22 50	6 08	232	284	0 59
3	55 Tauri	7.3	7 06	14 18	112	62	8 09	15 21	239	186	1 03
3	63 Tauri	5.6	8 51	16 03	67	13	9 48	17 00	288	235	0 57
4	115 Tauri	5.4	10 28	17 36	58	3	11 14	18 22	309	256	0 46
7	29 Cancri	5.9	9 11	16 07	90	39	10 24	17 20	307	265	1 13
23	B. A. C. 7620	6.5	21 34	3 29	65	68	23 06	5 01	245	226	1 32
27	e Piscium	5.7	4 50	10 28	43	355	5 52	11 30	279	228	1 02
31	B. A. C. 1526	5.8	11 11	16 33	124	71	11 54	17 16	237	183	0 43

NOTE.—The angles of position are counted from the north point and vertex of the Moon's limb, toward the east.

* Whole occultation below the horizon of Washington.

† Immersion below the horizon of Washington.

‡ Emersion below the horizon of Washington.

FOR WASHINGTON MEAN NOON.

Date.	k	i	θ	L	Date.	k	i	θ	L
Jan. 1	0.933	30.1	0.9	36.8	July 5	0.564	82.7	171.7	50.3
6	0.879	41.7	355.0	45.1	10	0.712	65.0	177.5	59.5
11	0.774	56.8	349.8	55.5	15	0.855	44.7	185.2	67.0
16	0.615	76.8	345.1	64.5	20	0.960	22.9	197.1	67.7
21	0.393	102.3	340.3	60.5	25	0.995	7.6	247.6	60.6
26	0.160	132.9	333.4	33.3	30	0.984	14.5	354.6	51.1
31	0.019	164.0	304.4	4.6	Aug. 4	0.944	27.5	8.8	42.7
Feb. 5	0.039	157.2	192.6	8.3	9	0.893	38.1	15.2	36.7
10	0.166	131.9	177.1	26.9	14	0.842	46.8	19.3	32.8
15	0.313	112.0	172.0	36.5	19	0.790	54.5	22.1	30.6
20	0.439	97.0	168.4	37.5	24	0.738	61.6	24.2	29.8
25	0.539	85.4	165.1	35.4	29	0.682	68.8	25.8	30.0
Mar. 2	0.621	76.0	161.9	32.8	Sept. 3	0.617	76.5	27.1	31.1
7	0.686	68.2	158.8	30.9	8	0.542	85.2	28.3	32.8
12	0.742	61.1	155.9	29.9	13	0.449	95.9	29.5	34.4
17	0.792	54.3	153.1	30.0	18	0.334	109.4	31.4	34.0
22	0.839	47.3	150.7	31.1	23	0.200	126.9	34.4	27.6
27	0.883	39.9	149.0	33.8	28	0.068	149.8	41.5	12.5
Apr. 1	0.931	30.5	146.4	38.4	Oct. 3	0.004	173.3	117.0	0.8
6	0.972	19.3	143.4	45.3	8	0.077	147.8	200.2	16.4
11	0.997	5.6	125.3	54.5	13	0.285	115.5	206.5	49.0
16	0.987	13.4	341.5	64.1	18	0.526	87.0	208.7	65.1
21	0.916	33.5	337.2	69.5	23	0.725	63.2	209.7	61.9
26	0.787	55.0	338.3	66.6	28	0.851	45.3	209.7	51.2
May 1	0.631	74.9	340.5	59.7	Nov. 2	0.927	31.4	208.8	41.4
6	0.476	92.6	343.1	47.6	7	0.967	20.7	207.1	34.1
11	0.340	108.6	345.6	37.5	12	0.989	12.1	203.7	29.3
16	0.223	123.6	348.0	27.7	17	0.999	4.4	195.4	26.4
21	0.124	138.6	350.5	17.7	22	1.000	1.8	51.8	24.8
26	0.051	154.1	355.0	7.9	27	0.995	7.6	26.1	24.9
31	0.008	169.9	13.6	1.3	Dec. 2	0.986	13.6	19.8	25.1
5	0.007	170.6	128.1	1.1	7	0.970	20.1	14.8	26.9
10	0.045	155.5	150.2	7.0	12	0.944	27.4	9.8	30.2
15	0.114	140.5	156.0	15.9	17	0.903	36.3	4.9	35.3
20	0.204	126.3	159.7	24.9	22	0.839	47.3	0.1	42.9
25	0.309	112.5	163.1	33.1	27	0.736	61.9	355.3	52.5
30	0.427	98.3	167.0	40.1	32	0.578	81.1	350.9	61.0

NOTATION.

k =the ratio of the area of the illuminated portion of the apparent disk to the area of the entire apparent disk regarded as circular.

i =the angle between the Sun and Earth, as seen from the planet.

θ =the angle which the line joining the cusps, or extremities of the illuminated portion, makes with the meridian.

L =the brilliancy of the disk. The unit of L is the amount of light received by an eye from a circular disk with the same albedo as the planet, subtending an angular radius of one second of arc, situated at distance unity from the Sun, and illuminated by the latter as the mean disk of the planet is illuminated.

FOR WASHINGTON MEAN NOON.

Date.	k	i	H	L	Date.	k	i	θ	L
Jan. 1	0.991	11.0	359.2	47.9	Aug. 4	0.326	110.3	25.9	182.1
6	0.988	12.6	356.6	48.2	9	0.287	115.2	27.1	187.0
11	0.985	14.3	354.2	48.5	14	0.246	120.6	28.6	187.5
16	0.981	15.9	351.9	48.8	19	0.202	126.5	30.6	181.3
21	0.977	17.6	349.7	49.2	24	0.158	133.1	33.3	166.3
26	0.972	19.2	347.6	49.7	29	0.114	140.5	37.0	139.9
31	0.966	20.9	345.7	50.2	31	0.097	143.7	39.0	126.2
Feb. 5	0.961	22.6	343.9	50.8	Sept. 2	0.081	146.9	41.5	111.1
10	0.955	24.3	342.3	51.5	4	0.066	150.3	44.6	94.6
15	0.950	26.0	341.2	52.2	6	0.052	153.7	48.6	78.0
20	0.943	27.7	340.4	53.0	8	0.039	157.1	53.6	61.9
25	0.936	29.5	339.7	53.9	10	0.029	160.4	60.4	47.1
Mar. 2	0.928	31.3	339.2	54.9	12	0.020	163.5	69.9	34.4
7	0.919	33.1	338.9	55.9	14	0.015	166.0	83.2	25.3
12	0.909	35.0	338.9	56.9	16	0.012	167.6	101.1	20.1
17	0.899	36.8	339.1	58.1	18	0.011	167.8	121.9	19.3
22	0.889	38.7	339.5	59.4	20	0.014	166.6	140.9	23.5
27	0.878	40.7	340.2	60.8	22	0.018	164.3	155.6	31.8
Apr. 1	0.867	42.7	341.2	62.2	24	0.026	161.3	166.0	44.2
6	0.855	44.7	342.4	63.8	26	0.036	158.1	173.4	59.1
11	0.842	46.8	343.9	65.5	28	0.049	154.6	178.7	76.1
16	0.829	48.8	345.5	67.4	30	0.062	151.2	183.0	94.1
21	0.815	50.9	347.4	69.5	Oct. 2	0.077	147.7	186.2	112.1
26	0.801	53.0	349.5	71.7	4	0.093	144.4	188.8	129.3
May 1	0.786	55.2	351.7	74.0	6	0.110	141.1	190.9	145.2
6	0.770	57.4	354.0	76.6	8	0.128	138.0	192.6	159.1
11	0.753	59.6	356.4	79.4	13	0.174	130.7	195.9	186.8
16	0.735	62.0	358.9	82.4	18	0.219	124.2	198.3	201.0
21	0.716	64.4	1.4	85.6	23	0.262	118.4	200.1	206.3
26	0.697	66.8	3.8	89.1	28	0.303	113.2	201.5	205.0
31	0.677	69.3	6.2	93.0	Nov. 2	0.341	108.5	202.6	199.8
June 5	0.656	71.8	8.5	97.3	7	0.377	104.2	203.4	191.8
10	0.635	74.4	10.6	101.9	12	0.410	100.3	204.0	182.8
15	0.613	77.0	12.6	107.0	17	0.442	96.7	204.3	173.3
20	0.590	79.7	14.5	112.6	22	0.472	93.3	204.3	164.0
25	0.566	82.4	16.2	118.8	27	0.499	90.1	204.2	155.0
30	0.541	85.3	17.8	125.5	Dec. 2	0.525	87.0	203.8	146.0
July 5	0.515	88.3	19.2	132.9	7	0.550	84.2	203.1	137.6
10	0.487	91.4	20.5	140.7	12	0.574	81.5	202.1	130.2
15	0.457	94.8	21.6	148.7	17	0.597	78.9	201.0	123.5
20	0.426	98.4	22.6	156.8	22	0.619	76.4	199.6	117.4
25	0.395	102.1	23.7	165.8	27	0.639	73.9	198.0	111.8
30	0.362	106.0	24.8	174.8	32	0.658	71.6	196.2	106.6
Aug. 4	0.326	110.3	25.9	182.1					

NOTATION.

k = the ratio of the area of the illuminated portion of the apparent disk to the area of the entire apparent disk regarded as circular.

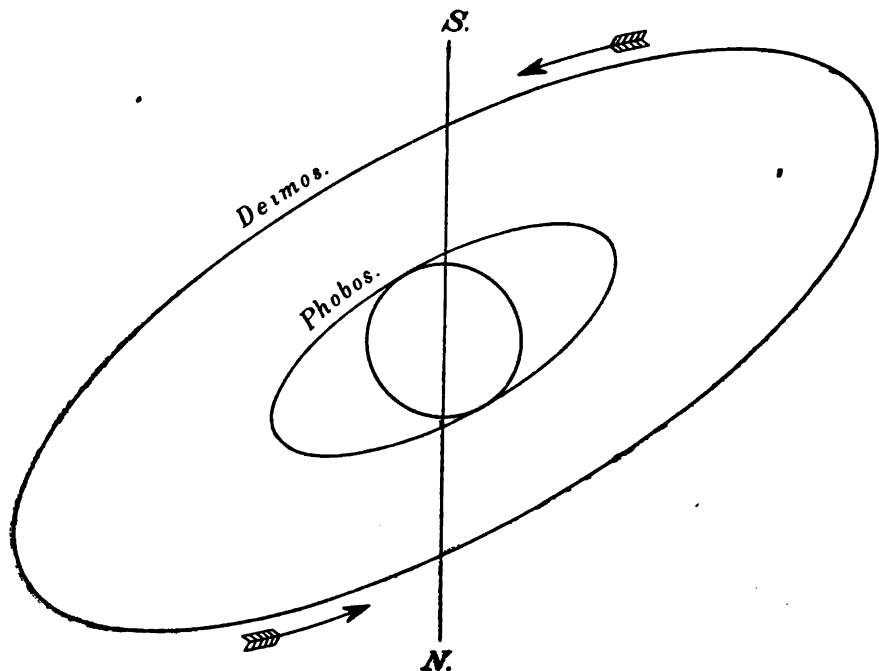
i = the angle between the Sun and Earth, as seen from the planet.

θ = the angle which the line joining the cusps, or extremities of the illuminated portion, makes with the meridian.

L = the brilliancy of the disk. The unit of L is the amount of light received by an eye from a circular disk with the same albedo as the planet, subtending an angular radius of one second of arc, situated at distance unity from the Sun, and illuminated by the latter as the mean disk of the planet is illuminated.

FOR WASHINGTON MEAN NOON.

Date.	<i>k</i>	<i>i</i>	θ	<i>L</i>	Date.	<i>k</i>
		°	°			
Jan. 1	0.904	35.9	203.1	5.2	July 10	0.873
11	0.907	35.3	202.6	6.1	20	0.873
21	0.914	34.1	202.0	7.3	30	0.874
31	0.924	32.1	201.3	8.9	Aug. 9	0.876
Feb. 10	0.937	29.2	200.4	10.9	19	0.879
20	0.952	25.2	199.3	13.6	29	0.883
Mar. 2	0.971	19.8	197.8	16.5	Sept. 8	0.887
12	0.987	13.0	194.3	19.2	18	0.892
22	0.997	5.8	183.4	22.2	28	0.898
Apr. 1	1.000	3.4	56.5	23.4	Oct. 8	0.903
11	0.991	11.2	31.6	22.9	18	0.909
21	0.974	18.6	27.3	20.9	28	0.915
May 1	0.953	24.9	25.4	18.5	Nov. 7	0.922
11	0.933	30.0	24.5	15.8	17	0.928
21	0.914	33.9	24.0	13.4	27	0.934
31	0.900	36.8	23.7	11.5	Dec. 7	0.940
June 10	0.888	38.9	23.5	9.9	17	0.946
20	0.881	40.3	23.3	8.7	27	0.951
30	0.875	41.3	23.1	7.7	37	0.956



APPARENT ORBITS OF THE SATELLITES OF MARS DURING THE OPPOSITION OF 1903, AS SEEN IN AN INVERTING TELESCOPE.

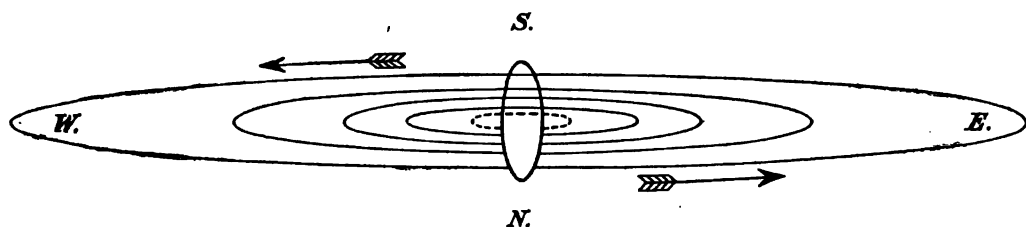
The circle represents the disk of the planet and is on the same scale as the orbits.

WASHINGTON MEAN TIME OF GREATEST ELONGATION, 1903.

Phobos.				Deimos.			
Mar.	d h			Mar.	d h		
13	13.4	E.		13	13.4	E.	
14	16.2	W.		15	10.8	W.	
15	19.0	E.		17	08.2	E.	
16	21.8	W.		19	05.6	W.	
18	00.6	E.		21	03.0	E.	
19	03.3	W.		23	00.4	W.	
20	06.1	E.		24	21.7	E.	
21	08.9	W.		26	19.1	W.	
22	11.7	E.		28	16.5	E.	
23	14.4	W.		30	13.9	W.	
24	17.2	E.		Apr. 1	11.3	E.	
25	20.0	W.		3	08.7	W.	
26	22.8	E.		5	06.0	E.	
28	01.6	W.		7	03.4	W.	
29	04.4	E.		9	00.8	E.	
Mar.	d h			Apr.	d h		
30	07.1	W.		16	00.8	E.	
31	09.9	E.		17	03.6	W.	
Apr. 1	12.7	W.		18	06.4	E.	
2	15.5	E.		19	09.2	W.	
3	18.2	W.		20	12.0	E.	
4	21.1	E.		21	14.7	W.	
5	23.8	W.		22	17.5	E.	
7	02.6	E.		23	20.3	W.	
8	05.4	W.		24	23.1	E.	
9	08.1	E.		26	01.9	W.	
10	10.9	W.		27	04.7	E.	
11	13.7	E.		28	07.4	W.	
12	16.5	W.		29	10.2	E.	
13	19.3	E.		30	13.0	W.	
14	22.0	W.		May 1	15.8	E.	

Phobos.			Deimos.		
Date.	Position Angle.	Distance.	Date.	Position Angle.	Distance.
Mar. 8	303.6	18.3	Mar. 8	303.6	46.0
28	301.1	20.2	28	301.1	50.7
Apr. 17	297.8	19.6	Apr. 17	297.8	49.3

For Phobos every seventh eastern and western elongation is given and for Deimos every third; the intermediate ones may be found by adding the periodic time of each satellite. Periodic time of Phobos, 7^h 39^m 13.85^s. Periodic time of Deimos, 30^h 17^m 54.86^s.



APPARENT ORBITS OF THE SATELLITES OF JUPITER IN 1903,
AS SEEN IN AN INVERTING TELESCOPE.

(The vertical scale is three times the horizontal one.)

IN the above diagram the central vertical ellipse represents the disk of Jupiter, elongated three times in the vertical direction, and the dotted ellipse represents the orbit of Satellite V. The object of the figure is to facilitate the identification of satellites in cases where the diagrams of configurations do not suffice. For example, if two satellites are seen together a reference to the above figure will show which is the inner and which the outer one of the pair.

The ephemeris of the four outer satellites of Jupiter is given on pages 486-507, each month occupying two pages, which contain respectively the times of the phenomena and the diagrams of the configurations. The latter are given for each day, Jupiter being represented by a light disk, ○, in the center of the page, and the relative positions of the satellites at the Washington time stated above the diagrams being indicated by dots. The designation of each satellite is shown by a numeral placed to the right or left of the dot according as the motion of the satellite at the instant in question is toward the east or toward the west—the motion being always toward the numeral. In constructing the diagrams the latitudes of the satellites are always considered zero, except where two or more of them chance to be at nearly the same distance from the planet, when they are placed one above the other according to their apparent latitudes. If at the epoch of any configuration, one or more satellites are projected on the disk of the planet, that phenomenon is indicated by a light disk, ○, at the left-hand side of the page; and if any satellites are invisible on account of being occulted behind the disk of the planet, or eclipsed by its shadow, that circumstance is indicated by a dark disk, ●, at the right-hand side of the page. In both cases, the annexed numerals serve to point out which satellites are thus rendered invisible.

When an observation is made at a different hour from that for which the diagram is constructed, the place of the satellite may be found by transferring its given position to the above diagram, and estimating its motion during the elapsed interval by means of the following table of—

MEAN SYNODIC PERIODS OF THE SATELLITES.

	d	h	m	s		d		d	h	m	s		d	
I.	1	18	28	35.945	=	1.769	860 48	III.	7	03	59	35.854	=	7.166 387 20
II.	3	13	17	53.735	=	3.554	094 16	IV.	16	18	05	06.928	=	16.753 552 41
						d	h	m	s		d			
						0	11 57	27.635	=	0.498	236 52			

SATELLITE V.

WASHINGTON MEAN TIME OF EVERY TWENTIETH GREATEST ELONGATION.

June	d	h	E.	Sept.	d	h	E.	June	d	h	W.	Sept.	d	h	W.
July	4	16.4	E.	Oct.	2	08.2	E.	July	4	10.4	W.	Oct.	2	14.2	W.
	14	15.5	E.		12	07.3	E.		14	09.5	W.		12	13.3	W.
	24	14.6	E.		22	06.4	E.		24	08.6	W.		22	12.4	W.
Aug.	3	13.7	E.	Nov.	1	17.5	E.	Aug.	3	07.7	W.	Nov.	1	11.5	W.
	13	12.8	E.		11	16.6	E.		13	06.8	W.		11	10.6	W.
	23	11.8	E.		21	15.8	E.		23	17.8	W.		21	09.8	W.
Sept.	2	10.9	E.	Dec.	1	14.9	E.	Sept.	2	16.9	W.	Dec.	1	09.0	W.
	12	10.0	E.		11	14.1	E.		12	16.0	W.		11	08.1	W.

WASHINGTON MEAN TIME OF SUPERIOR GEOCENTRIC CONJUNCTION.

SATELLITE I.

Jan.	0	h	m	May	15	h	m	Aug.	1	h	m	Oct.	18	h	m
	2	13	12.3		17	3	29.4		3	0	04.9		19	19	20.0
	4	7	42.6		18	21	58.7		4	18	31.6		21	13	47.1
	6	2	12.9		20	16	27.9		6	12	58.2		23	8	14.1
	7	20	43.2		22	10	57.2		8	7	24.7		25	2	41.1
	9	15	13.6		24	5	26.4		10	1	51.2		26	21	08.3
	11	9	44.0		25	23	55.5		11	20	17.7		28	15	35.5
	13	4	14.5		27	18	24.6		13	14	44.1		30	10	02.8
	14	22	44.9		29	12	53.7		15	9	10.4	Nov.	1	4	30.2
	16	17	15.4		31	7	22.7		17	3	36.6		2	22	57.7
	18	11	45.7	June	2	1	51.7		18	22	02.8		4	17	25.3
					3	20	20.5		20	16	28.9		6	11	52.9
Mar.	21	11	32.3		5	14	49.3		22	10	55.1		8	6	20.6
	23	6	02.6		7	9	18.0		24	5	21.2		10	0	48.3
					9	3	46.7		25	23	47.3		11	19	16.2
	25	0	32.9		10	22	15.3		27	18	13.3		13	13	44.1
	26	19	03.2		12	16	43.9		29	12	39.4		15	8	12.1
	28	13	33.4		14	11	12.5		31	7	05.4		17	2	40.2
	30	8	03.6		16	5	41.1	Sept.	2	1	31.4		18	21	08.3
Apr.	1	2	33.8		18	0	09.4		3	19	57.4		20	15	36.5
	2	21	04.0		19	18	37.8		5	14	23.4		22	10	04.9
	4	15	34.1		21	13	06.0		7	8	49.3		24	4	33.2
	6	10	04.3		23	7	34.3		9	3	15.3		25	23	01.7
	8	4	34.4		25	2	02.4		10	21	41.2		27	17	30.2
	9	23	04.6		26	20	30.4		12	16	07.2		29	11	58.8
	11	17	34.6		28	14	58.4		14	10	33.1	Dec.	1	6	27.5
	13	12	04.6		30	9	26.4		16	4	59.2		3	0	56.3
	15	6	34.6			3	54.3		17	23	25.1		4	19	25.1
	16	1	04.7	July	3	22	22.2		19	17	51.1		6	13	54.0
	18	19	34.6		5	16	49.9		21	12	17.1		8	8	23.0
	20	14	04.5		7	11	17.6		23	6	43.3		10	2	52.0
	22	8	34.4		9	5	45.2		25	1	09.3		11	21	21.0
	24	3	04.3		11	0	12.8		26	19	35.5		13	15	50.2
	25	21	34.1		12	18	40.3		28	14	01.7		15	10	19.3
	27	16	04.0		14	13	07.8		30	8	28.0		17	4	48.6
	29	10	33.7		16	7	35.1	Oct.	2	2	54.2		18	23	17.9
May	1	5	03.5		18	2	02.3		3	21	20.5		20	17	47.3
	2	23	33.2		19	20	29.5		5	15	46.8		22	12	16.7
	4	18	02.8		21	14	56.8		7	10	13.3		24	6	46.2
	6	12	32.4		23	9	23.8		9	4	39.7		26	1	15.7
	8	7	02.0		25	3	50.8		10	23	06.3		27	19	45.2
	10	1	31.5		26	22	17.8		12	17	32.9		29	14	14.8
	11	20	01.1		28	16	44.7		14	11	59.6		31	8	44.4
	13	14	30.5		30	11	11.5		16	6	26.3				

WASHINGTON MEAN TIME OF SUPERIOR GEOCENTRIC CONJUNCTION.

SATELLITE II.

		h	m			h	m			h	m			h	m
Jan.	0	17	45.7	May	12	10	18.8	July	29	14	11.3	Oct.	15	15	01.1
	4	7	10.9		15	23	40.0	Aug.	2	3	21.0		19	4	11.0
	7	20	37.5		19	13	00.6		5	16	30.4		22	17	21.5
	11	10	02.9		23	2	21.0		9	5	39.3		26	6	32.6
	14	23	29.5		26	15	40.8		12	18	47.9		29	19	44.5
	18	12	55.2		30	5	00.1		16	7	56.1	Nov.	2	8	56.6
Mar.	20	1	23.7	June	2	18	19.1		19	21	03.7		5	22	09.6
	23	14	48.9		6	7	37.6		23	10	11.1		9	11	22.9
	27	4	14.6		9	20	55.5		26	23	18.1		13	0	37.4
					13	10	13.1		30	12	25.0		16	13	52.2
Apr.	30	17	39.3		16	23	30.1	Sept.	3	1	31.7		20	3	08.0
	3	7	04.3		20	12	46.6		6	14	38.3		23	16	24.0
	6	20	28.7		24	2	02.5		10	3	44.8		27	5	41.0
	10	9	53.3		27	15	17.9		13	16	51.4		30	18	58.1
	13	23	17.2	July	1	4	32.8		17	5	58.0	Dec.	4	8	16.3
	17	12	41.2		4	17	47.1		20	19	04.7		7	21	34.8
	21	2	04.5		8	7	00.9		24	8	11.8		11	10	54.2
	24	15	27.9		11	20	14.1		27	21	19.0		15	0	13.7
	28	4	50.5		15	9	26.7	Oct.	1	10	26.6		18	13	34.4
May	1	18	13.2		18	22	38.6		4	23	34.6		22	2	54.9
	5	7	35.3		22	11	50.0		8	12	42.9		25	16	16.3
	8	20	57.4		26	1	00.9		12	1	51.8		29	5	37.9

SATELLITE III.

		h	m			h	m			h	m			h	m
Jan	2	11	06.0	May	11	19	28.6	July	29	14	39.2	Oct.	16	3	24.9
	9	15	33.5		18	23	43.7	Aug.	5	18	08.3		23	6	54.2
	16	20	02.3		26	3	55.0		12	21	34.0		30	10	27.9
Mar.	22	12	42.5	June	2	8	02.9		20	0	55.6	Nov.	6	14	06.9
					9	12	07.3		27	4	14.8		13	17	51.0
Apr.	29	17	11.7		16	16	07.8	Sept.	3	7	31.2		20	21	40.7
	5	21	39.0		23	20	04.8		10	10	46.6		28	1	34.9
	13	2	04.8		30	23	57.1		17	14	02.0	Dec.	5	5	34.1
	20	6	28.7	July	8	3	45.2		24	17	18.5		12	9	37.1
	27	10	50.6		15	7	27.9	Oct.	1	20	37.6		19	13	44.0
May	4	15	11.0		22	11	05.9		8	23	59.2		26	17	55.1

SATELLITE IV.

		h	m			h	m			h	m			h	m
Jan.	10	6	23.1	May	25	2	37.6	Aug.	16	15	11.4	Nov.	7	17	01.6
				June	10	21	20.4	Sept.	2	5	33.8		24	10	00.5
Apr.	4	14	47.7		27	15	14.3		18	19	41.6	Dec.	11	4	03.0
	21	11	13.1	July	14	8	10.5	Oct.	5	10	02.7		27	22	58.6
May	8	7	13.0		31	0	08.3		22	1	03.5				

WASHINGTON MEAN TIME.

JANUARY.

d	h	m	s				d	h	m	s				
1	14	47		I.	Tr.	In.	7	22	33	54.0	I.	Ec.	Re.	
15	36			I.	Sh.	In.	23	30	37.0		II.	Ec.	Re.	
17	07			I.	Tr.	Eg.	8	16	49		I.	Tr.	In.	
17	56			I.	Sh.	Eg.	17	31			I.	Sh.	In.	
18	31			IV.	Tr.	In.	19	09			I.	Tr.	Eg.	
23	27			IV.	Tr.	Eg.	19	51			I.	Sh.	Eg.	
2	2	21		IV.	Sh.	In.	9	13	42		III.	Oc.	Dis.	
7	13			IV.*	Sh.	Eg.	13	52			II.	Tr.	In.	
9	15			III.	Oc.	Dis.	14	04			I.	Oc.	Dis.	
11	04			II.	Tr.	In.	15	15			II.	Sh.	In.	
12	02			I.	Oc.	Dis.	16	47			II.	Tr.	Eg.	
12	39			II.	Sh.	In.	17	02	36.0		I.	Ec.	Re.	
13	59			II.	Tr.	Eg.	18	08			II.	Sh.	Eg.	
15	07	44.1		I.	Ec.	Re.	20	06	46.5		III.	Ec.	Re.	
15	33			II.	Sh.	Eg.	10	3	55		IV.	Oc.	Dis.	
16	06	13.6		III.	Ec.	Re.	8	51			IV.	Oc.	Re.	
8	9	17		I.	Tr.	In.	10	26	46.4		IV.	Ec.	Dis.	
10	05			I.	Sh.	In.	11	19			I.	Tr.	In.	
11	38			I.	Tr.	Eg.	12	00			I.	Sh.	In.	
12	25			I.	Sh.	Eg.	13	40			I.	Tr.	Eg.	
4	5	43		II.*	Oc.	Dis.	14	20			I.	Sh.	Eg.	
6	33			I.*	Oc.	Dis.	15	05	03.4		IV.	Ec.	Re.	
9	36	26.9		I.	Ec.	Re.	11	8	34		I.	Oc.	Dis.	
10	10	55.7		II.	Ec.	Re.	8	35			II.	Oc.	Dis.	
5	3	48		I.	Tr.	In.	11	31	17.5		I.	Ec.	Re.	
4	34			I.	Sh.	In.	12	49	10.0		II.	Ec.	Re.	
6	08			I.*	Tr.	Eg.	5	50			I.*	Tr.	In.	
6	54			I.*	Sh.	Eg.	12	5	50		I.*	Sh.	In.	
23	25			III.	Tr.	In.	6	29			I.	Tr.	Eg.	
6	0	28		II.	Tr.	In.	8	10			I.	Tr.	Eg.	
1	03						8	49			I.	Sh.	Eg.	
1	57			I.	Oc.	Dis.	13	3	04		I.	Oc.	Dis.	
2	28			II.	Sh.	In.	3	16			II.	Tr.	In.	
3	08			III.	Sh.	In.	3	55			III.	Tr.	In.	
3	23			III.	Tr.	Eg.	4	33			II.	Sh.	In.	
4	05	10.5		II.	Tr.	Eg.	6	00	00.0		I.*	Ec.	Re.	
4	05			I.	Ec.	Re.	6	11			II.*	Tr.	Eg.	
4	50			II.	Sh.	Eg.	6	30			III.*	Sh.	In.	
6	09			III.*	Sh.	Eg.	7	25			II.	Sh.	Eg.	
22	18			I.	Tr.	In.	7	38			III.	Tr.	Eg.	
23	03			I.	Sh.	In.	10	11			III.	Sh.	Eg.	
7	0	39		I.	Tr.	Eg.	14	0	21		I.	Tr.	In.	
1	23			I.	Sh.	Eg.	0	58			I.	Sh.	In.	
19	10			II.	Oc.	Dis.	2	41			I.	Tr.	Eg.	
19	33			I.	Oc.	Dis.								
14	3	18		I.	Sh.	Eg.	21	35			I.	Oc.	Dis.	
21	35			II.	Oc.	Dis.	22	02			I.	Ec.	Re.	
15	0	28	42.9	I.	Ec.	Re.	15	0	28	42.9	I.	Ec.	Re.	
2	08	48.3		II.	Ec.	Re.	2	08	48.3		II.	Ec.	Re.	
18	52			I.	Tr.	In.	18	52			I.	Tr.	In.	
19	27			I.	Sh.	In.	19	27			I.	Sh.	In.	
21	12			I.	Tr.	Eg.	21	12			I.	Tr.	Eg.	
21	47			I.	Sh.	Eg.	21	47			I.	Sh.	Eg.	
16	16	05		I.	Oc.	Dis.	16	16	05		I.	Oc.	Dis.	
16	41			II.	Tr.	In.	16	41			II.	Tr.	In.	
17	50			II.	Sh.	In.	17	50			II.	Sh.	In.	
18	11			III.	Oc.	Dis.	18	11			III.	Oc.	Dis.	
18	57	23.4		I.	Ec.	Re.	18	57	23.4		I.	Ec.	Re.	
19	36			II.	Tr.	Eg.	19	36			II.	Tr.	Eg.	
20	43			II.	Sh.	Eg.	20	43			II.	Sh.	Eg.	
17	0	07	21.8	III.	Ec.	Re.	17	0	07	21.8	III.	Ec.	Re.	
13	22			I.	Tr.	In.	13	22			I.	Tr.	In.	
13	56			I.	Sh.	In.	13	56			I.	Sh.	In.	
15	42			I.	Tr.	Eg.	15	42			I.	Tr.	Eg.	
16	16			I.	Sh.	Eg.	16	16			I.	Sh.	Eg.	
18	10	36		I.	Oc.	Dis.	18	10	36		I.	Oc.	Dis.	
11	28			II.	Oc.	Dis.	11	28			II.	Oc.	Dis.	
13	26	04.2		I.	Ec.	Re.	13	26	04.2		I.	Ec.	Re.	
15	21			IV.	Tr.	In.	15	21			IV.	Tr.	In.	
15	27	18.4		II.	Ec.	Re.	15	27	18.4		II.	Ec.	Re.	
20	17			IV.	Tr.	Eg.	20	17			IV.	Tr.	Eg.	
20	35			IV.	Sh.	In.	20	35			IV.	Sh.	In.	
19	1	26		IV.	Sh.	Eg.	19	1	26		IV.	Sh.	Eg.	
7	53			I.	Tr.	In.	7	53			I.	Tr.	In.	
8	25			I.	Sh.	In.	8	25			I.	Sh.	In.	
10	13			I.	Tr.	Eg.	10	13			I.	Tr.	Eg.	
10	45			I.	Sh.	Eg.	10	45			I.	Sh.	Eg.	
20	5	06		I.	Oc.	Dis.	20	5	06		I.	Oc.	Dis.	
6	05			II.*	Tr.	In.	6	05			II.*	Tr.	In.	
7	08			II.	Sh.	In.	7	08			II.	Sh.	In.	
7	54	45.5		I.	Ec.	Re.	7	54	45.5		I.	Ec.	Re.	
8	25			III.	Tr.	Eg.	8	25			III.	Tr.	Eg.	
9	00			II.	Tr.	Eg.	9	00			II.	Tr.	Eg.	
10	00			III.	Sh.	Eg.	10	00			III.	Sh.	Eg.	
10	32			III.	Sh.	Eg.	10	32			III.	Sh.	Eg.	
12	08			III.	Tr.	Eg.	12	08			III.	Tr.	Eg.	
14	12			III.	Sh.	Eg.	14	12			III.	Sh.	Eg.	

THE SATELLITES OF JUPITER

ARE NOT VISIBLE FROM JANUARY 21 UNTIL MARCH 19,

JUPITER BEING TOO NEAR TO THE SUN.

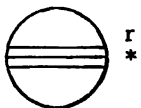
NOTE.—In., denotes ingress; Eg., egress; Dis., disappearance; Re., reappearance; Ec., eclipse.
Oc., denotes occultation; Tr., transit of the satellite; Sh., transit of the shadow; * Visible at Washington.

WASHINGTON MEAN TIME.

JANUARY.

Phases of the Eclipses of the Satellites for an Inverting Telescope.

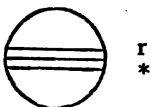
I.



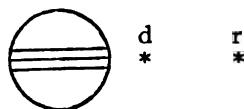
III.



II.



IV.

*Configurations at 6^h 00^m for an Inverting Telescope.*

Day.	West.	East.
1	'3	○ 4' 1' '2
2	I' 4' '3	○ 2'
3	4' 2'	○ I' '3
4	4' '1	○ '3 '2●
5	○ I' 4'	○ 3' 2'
6	'4 3' 2'	○ 'I
7	'4 '3' '2 I'	○
8	'4 '3	○ 1' 2'
9	'4 1' 3'	○ 2'
10	2'	○ I' '3 '4●
11	1' 2'	○ '4 '3
12	○ I'	○ '2 3' '4
13	○ 2' ○ 3'	○ 'I '4
14	3' '2 I'	○ '4
15	'3	○ '2 I' 4'
16	'3 I'	○ 2' 4'
17	2' 1' 2'	○ 1' 4' '3
18	4' 1' 2'	○ I' '2 3'
19	4'	○ 2' 3' 'I●
20	4'	○ 2' 3'
21		○
22		○
23		○
24		○
25		○
26		○
27		○
28		○
29		○
30		○
31		○

WASHINGTON MEAN TIME.

MARCH.

THE SATELLITES OF JUPITER

ARE NOT VISIBLE UNTIL MARCH 19,

JUPITER BEING TOO NEAR TO THE SUN.

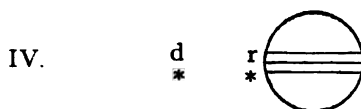
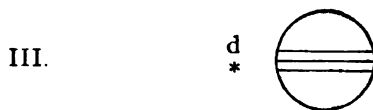
d	h	m	s		d	h	m	s		d	h	m	s		d	h	m	s	
19	0	18		III.	24	1	39		I.	27	8	13		IV.	15	24	21.4		I.
	15	24	21.4	I.		2	14		I.		14	36		I.		18	12		I.
	18	12		I.		3	59		I.		15	14		I.		22	58	26.3	II.
	22	58	26.3	II.		4	33		I.		16	56		I.		2	50		II.
20	2	50		II.		22	49	58.6	I.		17	34		I.					
	12	42		I.	25	1	43		I.	28	11	47	05.6	I.					
	13	13		I.		6	26		II.		14	43		I.					
	15	02		I.		7	37		II.		19	43		II.					
	15	32		I.		9	16		II.		21	02		II.					
21	9	52	53.3	I.		10	29		II.		22	34		II.					
	12	42		I.		20	08		I.		23	53		II.					
	17	08		II.		20	44		I.	29	9	05		I.					
	18	12		II.		22	27		I.		9	45		I.					
	19	59		II.		22	43		III.		11	25		I.					
	21	04		II.		23	04		I.		12	04		I.					
22	7	10		I.	26	1	11		III.		12	46	40.8	III.					
	7	43		I.		2	19		III.		18	59		III.					
	8	45	30.5	III.		4	46		III.	30	6	15	39.1	I.					
	9	30		I.		17	18	34.5	I.		9	13		I.					
	10	03		I.		20	13		I.		14	53	15.8	II.					
	14	30		III.		21	33		IV.		19	05		II.					
23	4	21	27.3	I.	27	1	35	14.5	II.	31	3	34		I.					
	7	12		I.		2	13		IV.		4	15		I.					
	12	16	31.9	II.		3	35		IV.		5	53		I.					
	16	15		II.		5	40		II.		6	34		I.					

NOTE.—In., denotes ingress; Eg., egress; Dis., disappearance; Re., reappearance; Ec., eclipse.

Oc., denotes occultation; Tr., transit of the satellite; Sh., transit of the shadow; * Visible at Washington.

WASHINGTON MEAN TIME.

MARCH.

Phases of the Eclipses of the Satellites for an Inverting Telescope.*Configurations at 18^h 00^m for an Inverting Telescope.*

Day.	West.			East.		
1				○		
2				○		
3				○		
4				○		
5				○		
6				○		
7				○		
8				○		
9				○		
10				○		
11				○		
12				○		
13				○		
14				○		
15				○		
16				○		
17				○		
18				○		
19	3°	2°		○	4°	1° ●
20	3°	1°		○	2°	4°
21		3°		○ 2°	1°	4°
22		2°	1°	○	3°	4°
23				○	2°	1° 3° 4°
24			1°	○	2°	3° 4°
25			2°	○	1° 3°	4°
26		3°	2°	○	4°	1° ●
27	3°		4° 1°	○	2°	
28	4°	3°		○	2° 1°	
29	4°		2° 1°	○		3° ●
30	4°			○	1°	3° 2° ●
31	4°		1°	○	2°	3°

WASHINGTON MEAN TIME.

APRIL.

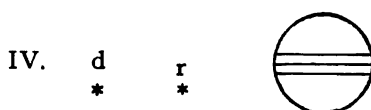
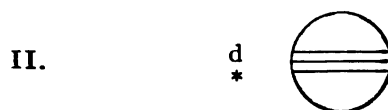
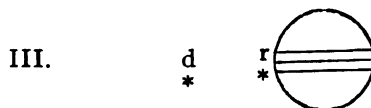
d	h	m	s				d	h	m	s				d	h	m	s			
1	0	44	09.6	I.	Ec.	Dis.	11	15	35	22.9	I.	Ec.	Dis.	21	9	02		IV.	Oc.	Dis.
	3	44		I.	Oc.	Re.		18	44		I.	Oc.	Re.		9	16		I.	Sh.	In.
	9	01		II.	Sh.	In.	12	0	54		II.	Sh.	In.		10	16		I.	Tr.	In.
	10	27		II.	Tr.	In.		2	40		II.	Tr.	In.		11	36		I.	Sh.	Eg.
	11	51		II.	Sh.	Eg.		3	45		II.	Sh.	Eg.		12	36		I.	Tr.	Eg.
	13	17		II.	Tr.	Eg.		5	30		II.	Tr.	Eg.		13	24		IV.	Oc.	Re.
	22	02		I.	Sh.	In.		12	54		I.	Sh.	In.	22	6	26	30.0	I.	Ec.	Dis.
	22	45		I.	Tr.	In.		13	46		I.	Tr.	In.		9	44		I.	Oc.	Re.
2	0	22		I.	Sh.	Eg.		15	13		I.	Sh.	Eg.		16	48		II.*	Sh.	In.
	1	05		I.	Tr.	Eg.		15	47		IV.	Sh.	In.		18	52		II.	Tr.	In.
	2	43		III.	Sh.	In.		16	05		I.	Tr.	Eg.		19	39		II.	Sh.	Eg.
	5	40		III.	Tr.	In.		20	23		IV.	Sh.	Eg.		21	40		II.	Tr.	Eg.
	6	19		III.	Sh.	Eg.		20	47	32.5	III.	Ec.	Dis.	23	3	45		I.	Sh.	In.
	9	13		III.	Tr.	Eg.	18	0	12	10.7	III.	Ec.	Re.		4	46		I.	Tr.	In.
	19	12	45.0	I.	Ec.	Dis.		0	18		IV.	Tr.	In.		6	04		I.	Sh.	Eg.
	22	14		I.	Oc.	Re.		0	19		III.	Oc.	Dis.		7	05		I.	Tr.	Eg.
8	4	11	49.9	II.	Ec.	Dis.		3	50		III.	Oc.	Re.		14	46		III.	Sh.	In.
	8	30		II.	Oc.	Re.		4	46		IV.	Tr.	Eg.		18	20		III.	Sh.	Eg.
	16	31		I.	Sh.	In.		10	03	55.9	I.	Ec.	Dis.		18	59		III.	Tr.	In.
	17	16		I.	Tr.	In.		13	14		I.	Oc.	Re.		22	27		III.	Tr.	Eg.
	18	50		I.	Sh.	Eg.		20	06	05.8	II.	Ec.	Dis.	24	0	55	04.3	I.	Ec.	Dis.
	19	35		I.	Tr.	Eg.	14	0	42		II.	Oc.	Re.		4	14		I.	Oc.	Re.
4	5	28	47.2	IV.	Ec.	Dis.		7	22		I.	Sh.	In.		12	00	21.0	II.	Ec.	Dis.
	9	52	12.8	IV.	Ec.	Re.		8	16		I.	Tr.	In.		16	52		II.	Oc.	Re.
	12	31		IV.	Oc.	Dis.		9	42		I.	Sh.	Eg.		22	13		I.	Sh.	In.
	13	41	15.5	I.	Ec.	Dis.		10	36		I.	Tr.	Eg.		23	16		I.	Tr.	In.
	16	44		I.	Oc.	Re.	15	4	32	24.7	I.	Ec.	Dis.	25	0	33		I.	Sh.	Eg.
	17	04		IV.*	Oc.	Re.		7	44		I.	Oc.	Re.		1	35		I.	Tr.	Eg.
	22	19		II.	Sh.	In.		14	12		II.	Sh.	In.		19	23	33.5	I.	Ec.	Dis.
	23	52		II.	Tr.	In.		16	04		II.	Tr.	In.		22	44		I.	Oc.	Re.
5	1	09		II.	Sh.	Eg.		17	03		II.	Sh.	Eg.	26	6	06		II.	Sh.	In.
	2	42		II.	Tr.	Eg.		18	54		II.	Tr.	Eg.		8	15		II.	Tr.	In.
	10	59		I.	Sh.	In.	16	1	51		I.	Sh.	In.		8	57		II.	Sh.	Eg.
	11	46		I.	Tr.	In.		2	46		I.	Sh.	Eg.		11	03		II.	Tr.	Eg.
	13	19		I.	Sh.	Eg.		4	10		I.	Tr.	Eg.		16	42		I.*	Sh.	In.
	14	05		I.	Tr.	Eg.		5	06		III.	Sh.	In.		17	46		I.	Tr.	In.
	16	47	11.2	III.	Ec.	Dis.		10	45		III.	Sh.	Eg.		19	01		I.	Sh.	Eg.
	23	25		III.	Oc.	Re.		14	20		III.	Tr.	In.		20	05		I.	Tr.	Eg.
6	8	09	48.7	I.	Ec.	Dis.		14	34		III.	Tr.	Eg.	27	4	48	09.3	III.	Ec.	Dis.
	11	14		I.	Oc.	Re.		18	05		I.	Ec.	Dis.		8	11	31.5	III.	Ec.	Re.
	17	29	47.2	II.	Ec.	Dis.		23	00	59.4	I.	Oc.	Re.		9	07		III.	Oc.	Dis.
	21	54		II.	Oc.	Re.	17	2	14		II.	Ec.	Dis.		12	35		III.	Oc.	Re.
7	5	28		I.	Sh.	In.		9	24	23.1	II.	Oc.	Re.		13	52	05.9	I.	Ec.	Dis.
	6	16		I.	Tr.	In.		14	06		I.	Sh.	In.		17	14		I.	Oc.	Re.
	7	47		I.	Sh.	Eg.		20	19		I.	Tr.	In.	28	1	18	06.0	II.	Ec.	Dis.
	8	35		I.	Tr.	Eg.		21	16		I.	Sh.	Eg.		6	15		II.	Oc.	Re.
8	2	38	18.2	I.	Ec.	Dis.		22	39		I.	Tr.	Eg.		11	10		I.	Sh.	In.
	5	44		I.	Oc.	Re.		23	36		I.	Ec.	Dis.		12	16		I.	Tr.	In.
	11	37		II.	Sh.	In.	18	17	29	28.8	I.	Oc.	Re.		13	30		I.	Sh.	Eg.
	13	16		II.	Tr.	In.		20	44		II.	Sh.	In.		14	35		I.	Tr.	Eg.
	14	27		II.	Sh.	Eg.	19	3	30		II.	Tr.	In.	29	8	20	33.8	I.	Ec.	Dis.
	16	06		II.	Tr.	Eg.		5	28		II.	Sh.	Eg.		10	01		IV.	Sh.	In.
	23	56		I.	Sh.	In.		6	21		II.	Tr.	Eg.		11	43		I.	Oc.	Re.
9	0	46		I.	Tr.	In.		8	17		I.	Sh.	In.		14	33		IV.	Sh.	Eg.
	2	16		I.	Sh.	Eg.		14	48		I.	Tr.	In.		19	24		II.	Sh.	In.
	3	05		I.	Tr.	Eg.		15	46		I.	Sh.	Eg.		20	42		IV.	Tr.	In.
	6	44		III.	Sh.	In.		17	07		I.	Tr.	Eg.		21	39		II.	Tr.	In.
	10	08		III.	Tr.	In.		18	06		I.	Ec.	Dis.		22	15		II.	Sh.	Eg.
	10	19		III.	Sh.	Eg.	20	0	47	47.7	III.	Ec.	Re.	30	0	27		II.	Tr.	Eg.
	13	40		III.	Tr.	Eg.		4	11	48.5	III.	Oc.	Dis.		5	39		IV.	Tr.	Eg.
	21	06	53.2	I.	Ec.	Dis.		4	44		III.	Oc.	Re.		6	45		I.	Sh.	In.
10	0	14		I.	Oc.	Re.		8	14		I.	Ec.	Dis.		7	58		I.	Tr.	In.
	6	48	12.7	II.	Ec.	Dis.		11	58	01.3	I.	Oc.	Re.		9	04		I.	Sh.	Eg.
	11	18		II.	Oc.	Re.		15	14		II.	Ec.	Dis.		18	47		III.	Sh.	In.
	18	25		I.	Sh.	In.		22	42	12.2	I.	Tr.	Eg.		22	20		III.	Sh.	Eg.
	19	16		I.	Tr.	In.		23	41	32.9	II.	Oc.	Re.		23	20		III.	Tr.	In.
	20	44		I.	Sh.	Eg.	21	3	29		IV.	Ec.	Re.							
	21	35		I.	Tr.	Eg.		4	00	48.7										

NOTE.—In., denotes ingress, Eg., egress, Dis., disappearance; Re., reappearance; Ec., eclipse.

Oc., denotes occultation; Tr., transit of the satellite, Sh., transit of the shadow; * Visible at Washington.

WASHINGTON MEAN TIME.

APRIL.

Phases of the Eclipses of the Satellites for an Inverting Telescope.*Configurations at 16^h 30^m for an Inverting Telescope.*

Day.	West.		East.	
1	'4	2°	○ 1° 3'	
2	'4	'2 3' 1	○	
3	3°	'4	○ 1°	'2
4	'3		○	2°
5		2° 1° 3	○	'4
6		'2	○	'1 3' '4
7		1°	○	'2 '3 '4
8	○ 2°		○	1° 3° '4
9		'2 '1 3'	○	4°
10		3°	○	1° '2 4°
11		'3	○	2° 4° '1 ●
12		2° '3 1°	○	4°
13		4° '2	○	'1 '3
14		4° 1°	○	'2 '3
15	○ 2° 4°		○	'1 3°
16	○ 3° 4°	'2 '1	○	
17	'4	3°	○	'2 1°
18	'4	'3 '1	○	2°
19	○ 1°	'4 '3 2°	○	
20		4° '2	○	'1 '3
21		1°	○	'4 '2 '3
22			○	2° '1 3° 4
23		2° '1	○	3° '4
24	'	3°	○	1° '4 '2 ●
25		'3 '1	○	2° 4°
26		'3 2°	○	1° 4°
27		'2	○	'3 4° '1 ●
28		1°	○	'2 4° '3
29			○	4° '1 3°
30		4° 1°	○	3°

WASHINGTON MEAN TIME.

MAY.

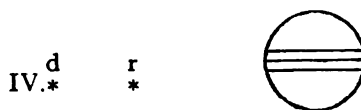
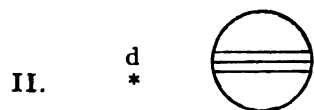
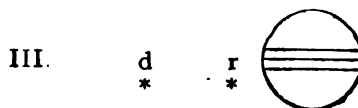
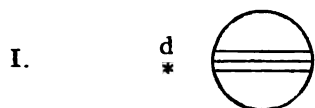
d	h	m	s		d	h	m	s		d	h	m	s		d	h	m	s	
1	2	48		III.	11	16	11	42.3	III.*	21	14	57		I.*	21	6	48		III.
	2	49	08.0	I.		17	40	11.6	I.		8	31	14.8	I.		8	31	14.8	I.
	6	13		I.		21	10		III.		10	19		III.		12	06		III.
	14	36	07.0	II.		21	10		I.		12	06		I.		12	11		I.
	19	37		II.		12	6	29 18.7	II.		12	11		III.		15	31		III.*
2	0	07		I.		11	42		II.		15	31		II.		22	22	17.8	II.
	1	15		I.		14	58		I.*		22	22	17.8	I.*		3	44		II.
	2	27		I.		16	12		I.*		5	49		I.		7	08		I.
	3	34		I.		17	18		I.		7	08		I.		8	08		I.
	21	17	36.7	I.		18	31		I.		9	26		I.		9	26		I.
3	0	43		I.		13	12	08 38.8	I.		16	15	43.6	I.		16	15	43.6	I.
	8	42		II.		15	40		I.		16	31		II.		19	13		II.
	11	02		II.		14	0	37	II.		19	21		II.		21	59		II.
	11	32		II.		3	11		II.		21	59		I.		0	17		I.
	13	49		II.		3	26		II.		2	36		I.		1	37		I.
	18	36		I.		5	56		II.		3	56		I.		2	36		I.
	19	45		I.		9	27		I.		4	33		I.		3	56		I.
	20	55		I.		10	42		I.		20	51	06.8	IV.		4	33		IV.
	22	04		I.		11	46		I.		21	28	16.1	III.		5	35		III.
4	8	49	05.0	III.		13	00		I.		21	28	16.1	I.		5	35		I.
	12	11	47.2	III.		15	2	47	III.		26	0	11 41.0	III.		11	39	48.3	III.
	13	28		III.		6	19		III.		1	05		I.		17	04		II.
	15	46	09.2	I.*		6	37	12.8	I.		2	15		I.		18	46		I.
	16	54		III.		7	57		III.		22	25		I.		20	06		I.
	19	12		I.		10	09		I.		22	25		I.		21	05		I.
5	3	53	48.1	II.		11	20		I.		27	15	56 43.0	I.*		22	25		I.
	8	59		II.		19	47	04.6	III.		27	15	56 43.0	I.		22	25		I.
	13	04		I.		16	1	03	II.		28	5	49	II.		22	25		II.
	14	14		I.		3	55		II.		8	34		II.		22	25		II.
	15	24		I.		4	16		IV.		8	39		II.		22	25		II.
	16	33		I.		5	11		I.		11	21		II.		22	25		II.
6	10	14	36.7	I.		6	14		I.		13	14		I.*		22	25		I.*
	13	42		I.		7	30		I.		14	36		I.*		22	25		I.*
	22	00		II.		8	43		IV.		15	33		I.		22	25		I.
7	0	25		II.		16	38		IV.		16	54		I.		22	25		I.
	0	50		II.		20	37		IV.		17	04		I.		22	25		I.
	3	11		II.		17	1	05 41.2	I.		18	46		I.		22	25		I.
	7	33		I.		4	39		I.		20	06		I.		22	25		I.
	8	44		I.		13	55		II.		21	05		I.		22	25		I.
	9	52		I.		16	32		II.		22	25		I.		22	25		I.
	11	03		I.		16	44		II.		27	15	56 43.0	I.*		22	25		I.
	17	53	48.3	IV.		19	17		II.		19	34		I.		22	25		I.
	22	08	24.1	IV.		22	24		I.		28	5	49	II.		22	25		II.
	22	47		III.		23	41		I.		8	34		II.		22	25		II.
8	2	19		III.		18	0	43	I.		8	39		II.		22	25		II.
	3	40		III.		1	59		I.		11	21		II.		22	25		II.
	4	43	10.8	I.		16	50	42.6	III.		13	14		I.		22	25		I.
	5	09		IV.		19	34	13.8	I.		14	36		I.*		22	25		I.*
	7	05		I.		20	12	00.8	III.		15	33		I.*		22	25		I.*
	8	12		I.		22	03		III.		16	54		I.		22	25		I.
	9	17		IV.		23	08		I.		17	04		I.		22	25		I.
	17	11	41.4	II.		19	1	24	III.		18	46		I.		22	25		I.
	22	21		II.		9	04	38.5	III.		20	06		I.		22	25		I.
9	2	01		I.		14	24		II.		21	05		I.		22	25		I.
	3	14		I.		16	52		I.		22	25		I.		22	25		I.
	4	21		I.		18	10		I.		22	25		I.		22	25		I.
	5	32		I.		19	11		I.		22	25		I.		22	25		I.
	23	11	39.3	I.		20	28		I.		22	25		I.		22	25		I.
10	2	41		I.		20	14	02 40.8	I.		22	25		I.		22	25		I.
	11	19		II.		21	3	13	II.		22	25		I.		22	25		I.
	13	47		II.		5	53		II.		22	25		I.		22	25		I.
	14	08		II.		6	02		II.		22	25		I.		22	25		I.
	16	33		II.		8	38		II.		22	25		I.		22	25		I.
	20	30		I.		11	20		I.		22	25		I.		22	25		I.
	21	43		I.		12	39		I.		22	25		I.		22	25		I.
	22	49		I.		13	40		I.		22	25		I.		22	25		I.
11	0	02		III.					I.		22	25		I.		22	25		I.
	12	49	41.3	III.					I.		22	25		I.		22	25		I.

NOTE.—In., denotes ingress; Eg., egress; Dis., disappearance; Re., reappearance; Ec., eclipse.

Oc., denotes occultation; Tr., transit of the satellite; Sh., transit of the shadow; * Visible at Washington.

WASHINGTON MEAN TIME.

MAY.

• *Phases of the Eclipses of the Satellites for an Inverting Telescope.**Configurations at 15^h 30^m for an Inverting Telescope.*

Day.	West.				East.		
1		4'	3'	○	'1		'2 ●
2	4'	3'	'1	○	'2		
3	4'	'3	2'	○	'1		
4	'4	'2	'1	○			'3 ●
5	○ '1	'4		○	'2	'3	
6		'4		○	'1	2'	3'
7		2'	'4 '1'	○	3'		
8		3'	'2	○	'4 '1		
9		3'	'1	○	'2	'4	
10	○ 2'	'3		○	'1		'4
11		'2	'1	○			'4 '3 ●
12				○	'1	'2	'3
13				○	2'	3'	4'
14		2'	'1	○	3'	4'	'1 ●
15		'2 3'		○	'1	4'	
16	○ 4'	3'	'1	○	'2		
17		'3	4'	○	2'	'1	
18		4'	2'	○	'1 '3		
19	4'			○	'2 '1	'3	
20	4'			○	2'	'3	'1 ●
21	'4	2'	'1	○	3'		
22	○ 3'	'4	'2	○	'1		
23		'4 3'	'1	○	'2		
24		'3		○	2'	'1	'4 ●
25		2'	'3 '1	○	'4		
26				○	'1	'3	'4
27		'1		○	2'	'3	'4
28	○ '1	2'		○	3'		'4
29		'2		○	3' '1		4'
30		3'	'1	○	'2		4'
31		'3		○	'1	4'	

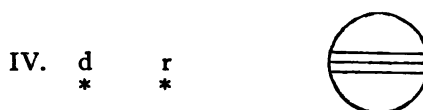
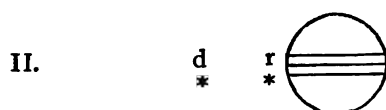
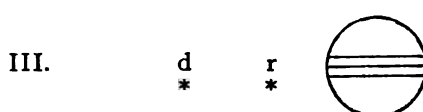
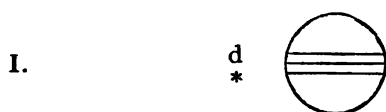
WASHINGTON MEAN TIME.									
JUNE.									
d	h	m	s		d	h	m	s	
1	0	41		II. Tr. Eg.	10	10	23	16.2	IV. Ec. Re.
2	11			I. Sh. In.		19	33		IV. Oc. Dis.
3	33			I. Tr. In.		19	44	50.3	I. Ec. Dis.
4	30			I. Sh. Eg.		23	07		IV. Oc. Re.
5	52			I. Tr. Eg.		23	24		I. Oc. Re.
22	30			IV. Sh. In.	11	11	03		II. Sh. In.
23	22	19.0		I. Ec. Dis.		13	52		II.* Sh. Eg.
2	0	51	24.0	III. Ec. Dis.		13	55		II.* Tr. In.
2	52			IV. Sh. Eg.		16	39		II. Tr. Eg.
3	01			I. Oc. Re.		17	02		I. Sh. In.
4	11	13.2		III. Ec. Re.		18	25		I. Tr. In.
6	24			III. Oc. Dis.		19	21		I. Sh. Eg.
9	42			III. Oc. Re.		20	43		I. Tr. Eg.
11	53			IV. Tr. In.	12	14	13	25.2	I.* Ec. Dis.
14	14	48.8		II.* Ec. Dis.		17	53		I. Oc. Re.
15	36			IV.* Tr. Eg.		18	50		III. Sh. In.
19	42			II. Oc. Re.		22	19		III. Sh. Eg.
20	40			I. Sh. In.	13	0	34		III. Tr. In.
22	02			I. Tr. In.		3	48		III. Tr. Eg.
22	59			I. Sh. Eg.		6	07	04.9	II. Ec. Dis.
3	0	20		I. Tr. Eg.		8	49	16.1	II. Ec. Re.
17	50	46.1		I. Ec. Dis.		8	51		II. Oc. Dis.
21	30			I. Oc. Re.		11	30		I. Sh. In.
4	8	26		II. Sh. In.		11	35		II. Oc. Re.
11	15			II. Sh. Eg.		12	54		I.* Tr. In.
11	15			II. Tr. In.		13	49		I.* Sh. Eg.
14	01			II.* Tr. Eg.		15	12		I.* Tr. Eg.
15	08			I.* Sh. In.	14	8	41	54.3	I. Ec. Dis.
16	31			I. Tr. In.		12	21		I. Oc. Re.
17	27			I. Sh. Eg.	15	0	22		II. Sh. In.
18	49			I. Tr. Eg.		3	10		II. Sh. Eg.
5	12	19	20.7	I. Ec. Dis.		3	13		II. Tr. In.
14	49			III.* Sh. In.		5	57		II. Tr. Eg.
15	58			I.* Oc. Re.		5	58		I. Sh. In.
18	19			III. Sh. Eg.		7	22		I. Tr. In.
20	30			III. Tr. In.		8	18		I. Sh. Eg.
23	46			III. Tr. Eg.		9	40		I. Tr. Eg.
6	3	32	17.0	II. Ec. Dis.	16	3	10	28.4	I. Ec. Dis.
6	14	51.0		II. Ec. Re.		6	50		I. Oc. Re.
6	15			II. Oc. Dis.		8	52	05.7	III. Ec. Dis.
9	00			II. Oc. Re.		12	10	20.9	III. Ec. Re.
9	36			I. Sh. In.		14	31		III.* Oc. Dis.
11	00			I. Tr. In.		17	45		III. Oc. Re.
11	56			I. Sh. Eg.		19	24	26.7	II. Ec. Dis.
13	18			I.* Tr. Eg.		22	06	26.7	II. Ec. Re.
7	6	47	49.3	I. Ec. Dis.		22	08		II. Oc. Dis.
10	27			I. Oc. Re.	17	0	27		I. Sh. In.
21	45			II. Sh. In.		0	52		II. Oc. Re.
8	0	34		II. Sh. Eg.		1	50		I. Tr. In.
0	35			II. Tr. In.		2	46		I. Sh. Eg.
3	20			II. Tr. Eg.		4	08		I. Tr. Eg.
4	05			I. Sh. In.		21	38	56.1	I. Ec. Dis.
5	28			I. Tr. In.	18	1	18		I. Oc. Re.
6	24			I. Sh. Eg.		13	40		II.* Sh. In.
7	46			I. Tr. Eg.		16	28		II. Sh. Eg.
9	1	16	23.0	I. Ec. Dis.		16	31		II. Tr. In.
4	51	39.8		III. Ec. Dis.		16	45		IV. Sh. In.
4	56			I. Oc. Re.		18	55		I. Sh. In.
8	10	42.8		III. Ec. Re.		19	15		II. Tr. Eg.
10	29			III. Oc. Dis.		20	19		I. Tr. In.
13	45			III.* Oc. Re.		21	01		IV. Sh. Eg.
16	49	41.3		II. Ec. Dis.		21	14		I. Sh. Eg.
19	32	03.9		II. Ec. Re.		22	36		I. Tr. Eg.
19	34			II. Oc. Dis.	19	6	22		IV. Tr. In.
22	18			II. Oc. Re.		9	48		IV. Tr. Eg.
22	33			I. Sh. In.		16	07	31.4	I.* Ec. Dis.
23	57			I. Tr. In.		19	47		I. Oc. Re.
10	0	52		I. Sh. Eg.		22	50		III. Sh. In.
2	15			I. Tr. Eg.	20	2	18		III. Sh. Eg.
6	19	17.4		IV. Ec. Dis.		4	33		III. Tr. In.
20	7	45		III. Tr. Eg.					
8	41	46.8		II. Ec. Dis.					
11	23	35.6		II. Ec. Re.					
11	25			II. Oc. Dis.					
13	24			I.* Sh. In.					
14	08			II.* Oc. Re.					
14	47			I.* Tr. In.					
15	43			I.* Sh. Eg.					
17	05			I. Tr. Eg.					
21	10	36	01.0	I. Ec. Dis.					
14	15			I.* Oc. Re.					
22	2	59		II. Sh. In.					
5	47			II. Sh. Eg.					
5	49			II. Tr. In.					
7	52			I. Sh. In.					
8	32			II. Tr. Eg.					
9	15			I. Tr. In.					
10	11			I. Sh. Eg.					
11	33			I. Tr. Eg.					
5	04	35.7		I. Ec. Dis.					
8	43			I. Oc. Re.					
12	53	10.1		III.* Ec. Dis.					
16	10	36.1		III.* Ec. Re.					
18	29			III. Oc. Dis.					
21	41			III. Oc. Re.					
21	59	06.3		II. Ec. Dis.					
0	40	43.9		II. Ec. Re.					
0	41			II. Oc. Dis.					
2	20			I. Sh. In.					
3	24			II. Oc. Re.					
3	43			I. Tr. In.					
4	40			I. Sh. Eg.					
6	01			I. Tr. Eg.					
23	33	03.8		I. Ec. Dis.					
3	11			I. Oc. Re.					
16	17			II. Sh. In.					
19	05			II. Sh. Eg.					
19	07			II. Tr. In.					
20	49			I. Sh. In.					
21	50			II. Tr. Eg.					
22	11			I. Tr. In.					
23	08			I. Sh. Eg.					
0	29			I. Tr. Eg.					
18	01	39.5		I. Ec. Dis.					
21	39			I. Oc. Re.					
0	32	23.6		IV. Ec. Dis.					
2	50			III. Sh. In.					
4	30	20.8		IV. Ec. Re.					
6	17			III. Sh. Eg.					
8	28			III. Tr. In.					
11	16	23.8		II. Ec. Dis.					
11	38			III. Tr. Eg.					
13	36			IV.* Oc. Dis.					
15	17			I.* Sh. In.					
16	39			II. Oc. Re.					
16	39			I. Tr. In.					
16	52			IV. Sh. In.					
17	36			I. Sh. In.					
18	57			II. Tr. Eg.					
12	30	09.9		I. Tr. In.					
16	07			IV. Sh. Eg.					
5	36			I. Sh. Eg.					
8	24			I. Tr. Eg.					
9	46			IV. Tr. In.					
11	06			I. Tr. In.					
11	07			I.* Sh. Eg.					
12	05			I.* Tr. In.					
13	25			I. Ec. Dis.					
6	58	45.5		I. Oc. Re.					
10	35			III. Sh. In.					
16	53	57.3		III. Sh. Eg.					
20	10	33.3		III. Tr. In.					
22	22			III. Oc. Dis.					

NOTE.—In., denotes ingress; Eg., egress; Dis., disappearance; Re., reappearance; Ec., eclipse.

Oc., denotes occultation; Tr., transit of the satellite; Sh., transit of the shadow; * Visible at Washington.

WASHINGTON MEAN TIME.

JUNE.

Phases of the Eclipses of the Satellites for an Inverting Telescope.*Configurations at 14^h 30^m for an Inverting Telescope.*

Day	West.			East.		
1		5 ^h 8 ^m	I ^o	○	4 ^h	
2	○ 4 ^h			○	3 ^h I ^o	2 ^h ●
3		4 ^h	I ^o	○	2 ^h 3 ^h	
4		4 ^h		2 ^h ○	I ^o	3 ^h
5	4 ^h		2 ^h	○	3 ^h	I ^o ●
6	4 ^h		3 ^h I ^o	○	2 ^h	
7	4 ^h	3 ^h		○	I ^o 2 ^h	
8		4 ^h	3 ^h 2 ^h I ^o	○		
9		4 ^h	2 ^h	○	3 ^h I ^o	
10			I ^o 4 ^h	○	2 ^h 3 ^h	
11	○ 2 ^h			○	I ^o 4 ^h 3 ^h	
12		2 ^h		○	3 ^h 4 ^h	I ^o ●
13	○ I ^o		3 ^h	○	2 ^h 4 ^h	
14		3 ^h		○	I ^o 2 ^h 4 ^h	
15		3 ^h	2 ^h I ^o	○		4 ^h
16			2 ^h	○	I ^o 4 ^h 3 ^h	3 ^h ●
17			I ^o	○	2 ^h 3 ^h 4 ^h	
18				○	2 ^h I ^o 4 ^h 3 ^h	
19		2 ^h	4 ^h 1 ^o	○	3 ^h	
20		4 ^h	3 ^h	○	I ^o 2 ^h	
21		4 ^h 3 ^h		○	I ^o 2 ^h	
22	4 ^h		3 ^h 2 ^h I ^o	○		
23	4 ^h		2 ^h	○	I ^o 3 ^h	3 ^h ●
24	4 ^h		I ^o	○	2 ^h 3 ^h	
25		4 ^h		○	2 ^h I ^o 3 ^h	
26		4 ^h	I ^o	○	3 ^h	
27			3 ^h	○	I ^o 2 ^h 4 ^h 3 ^h	2 ^h 4 ^h ●
28		3 ^h		○	4 ^h 3 ^h	I ^o ●
29		3 ^h	2 ^h I ^o	○	4 ^h	
30			2 ^h 3 ^h	○	I ^o 4 ^h	

WASHINGTON MEAN TIME.

JULY.

d	h	m	s				d	h	m	s				d	h	m	s				
1	0	33	42.0	II.	Ec.	Dis.	11	16	25	29.5	II.	Ec.	Dis.	22	8	17	17.6	II.	Ec.	Dis.	
	1	32		III.	Oc.	Re.		19	05		I.	Sh.	In.		9	20		IV.	Sh.	Eg.	
	4	14		I.	Sh.	In.		19	11		III.	Tr.	Eg.		9	33		III.	Oc.	Dis.	
	5	35		I.	Tr.	In.		20	20		I.	Tr.	In.		9	55		I.	Sh.	In.	
	5	54		II.	Oc.	Re.		21	23		I.	Sh.	Eg.		11	03		I.*	Tr.	In.	
	6	33		I.	Sh.	Eg.		21	35		II.	Oc.	Re.		12	14		I.*	Sh.	Eg.	
	7	52		I.	Tr.	Eg.		22	38		I.	Tr.	Eg.		12	39		III.*	Oc.	Re.	
2	1	27	14.0	I.	Ec.	Dis.	12	16	18	37.1	I.*	Ec.	Dis.		13	10		II.*	Oc.	Re.	
	5	03		I.	Oc.	Re.		19	49		I.	Oc.	Re.		13	20		I.*	Tr.	Eg.	
	18	54		II.	Sh.	In.	13	10	50		II.	Sh.	In.		16	31		IV.	Tr.	In.	
	21	40		II.	Tr.	In.		13	24		II.*	Tr.	In.		19	24		IV.	Tr.	Eg.	
	21	42		II.	Sh.	Eg.		13	33		I.*	Sh.	In.		23	7	10	05.8	I.	Ec.	Dis.
	22	43		I.	Sh.	In.		13	38		II.*	Sh.	Eg.		10	32		I.*	Oc.	Re.	
3	0	03		I.	Tr.	In.		14	48		I.*	Tr.	In.		24	2	46		II.	Sh.	In.
	0	22		II.	Tr.	Eg.		15	52		I.*	Sh.	Eg.		4	24		I.	Sh.	In.	
	1	01		I.	Sh.	Eg.		16	05		II.*	Tr.	Eg.		5	04		II.	Tr.	In.	
	2	20		I.	Tr.	Eg.		17	05		I.	Tr.	Eg.		5	30		I.	Tr.	In.	
	19	55	50.8	I.	Ec.	Dis.		18	45	56.0	IV.	Ec.	Dis.		5	33		II.	Sh.	Eg.	
	23	31		I.	Oc.	Re.		22	37	19.6	IV.	Ec.	Re.		6	42		I.	Sh.	Eg.	
4	6	50		III.	Sh.	In.	14	6	41		IV.	Oc.	Dis.		7	44		II.	Tr.	Eg.	
	10	17		III.	Sh.	Eg.		9	40		IV.	Oc.	Re.		7	47		I.	Tr.	Eg.	
	12	18		III.*	Tr.	In.		10	47	14.4	I.	Ec.	Dis.		25	1	38	45.5	I.	Ec.	Dis.
	13	50	57.8	II.*	Ec.	Dis.		14	16		I.*	Oc.	Re.		4	59		I.	Oc.	Re.	
	15	26		III.*	Tr.	Eg.	15	0	55	52.9	III.	Ec.	Dis.		18	52		III.	Sh.	In.	
	17	11		I.	Sh.	In.		4	10	43.7	III.	Ec.	Re.		21	34	33.6	III.	Ec.	Dis.	
	18	30		I.	Tr.	In.		5	42	46.1	III.	Oc.	Dis.		22	16		III.	Sh.	Eg.	
	19	08		II.	Oc.	Re.		5	55		I.	Sh.	In.		22	52		I.	Sh.	In.	
	19	30		I.	Sh.	Eg.		8	02		III.	Oc.	Re.		23	21		III.	Tr.	In.	
	20	48		I.	Tr.	Eg.		9	01		I.	Tr.	In.		23	57		I.	Tr.	In.	
5	11	00		IV.	Sh.	In.		9	15		I.	Sh.	Eg.		26	1	11		I.	Sh.	Eg.
	14	24	21.6	I.*	Ec.	Dis.		10	20		I.	Oc.	Re.		2	14		I.	Tr.	Eg.	
	15	11		IV.*	Sh.	Eg.		10	47		II.*	Oc.	Re.		2	21		II.	Oc.	Re.	
	17	59		I.	Oc.	Re.		11	32		I.*	Tr.	Eg.		2	26		III.	Tr.	Eg.	
	23	58		IV.	Tr.	In.	16	5	15	44.9	I.	Ec.	Dis.		20	07	19.4	I.	Ec.	Dis.	
6	3	06		IV.	Tr.	Eg.		8	44		I.	Oc.	Re.		23	26		I.	Oc.	Re.	
	8	13		II.	Sh.	In.	17	0	09		II.	Sh.	In.		16	05		II.*	Sh.	In.	
	10	56		II.	Tr.	In.		2	30		I.	Sh.	In.		17	20		I.	Sh.	In.	
	11	01		II.	Sh.	Eg.		2	39		II.	Sh.	Eg.		18	16		II.	Tr.	In.	
	11	40		I.	Sh.	In.		2	56		I.	Tr.	In.		18	24		I.	Tr.	In.	
	12	58		I.*	Tr.	In.		3	42		I.	Sh.	Eg.		18	52		II.	Sh.	Eg.	
	13	37		II.*	Tr.	Eg.		4	49		II.	Tr.	Eg.		19	39		I.	Sh.	Eg.	
	13	58		I.*	Sh.	Eg.		5	20		I.	Tr.	Eg.		20	41		I.	Tr.	Eg.	
	15	15		I.*	Tr.	Eg.		5	59		I.	Ec.	Dis.		20	56		II.	Tr.	Eg.	
7	8	52	58.1	I.	Ec.	Dis.		23	44	23.2	I.	Oc.	Re.		28	14	35	59.3	I.*	Ec.	Dis.
	12	26		I.*	Oc.	Re.	18	3	11		I.	Oc.	Re.		17	53		I.	Oc.	Re.	
	20	55	11.0	III.	Ec.	Dis.		14	52		III.*	Sh.	In.		8	57	15.8	III.	Ec.	Dis.	
8	0	10	55.4	III.	Ec.	Re.		18	16		III.	Sh.	Eg.		10	51	51.0	II.*	Ec.	Dis.	
	2	11		III.	Oc.	Dis.		19	45	01.2	III.	Tr.	In.		11	49		I.*	Sh.	In.	
	3	08	14.8	II.	Ec.	Dis.		19	45		I.	Sh.	In.		12	10	15.6	III.*	Ec.	Re.	
	5	19		III.	Oc.	Re.		20	58		I.	Tr.	In.		12	50		I.*	Tr.	In.	
	6	08		I.	Sh.	In.		22	09		III.	Tr.	Eg.		13	07		III.*	Oc.	Dis.	
	7	25		I.	Tr.	In.		22	50		I.	Sh.	Eg.		14	08		I.*	Sh.	Eg.	
	8	22		II.	Oc.	Re.		23	17		I.	Sh.	Eg.		15	07		I.*	Tr.	Eg.	
	8	27		I.	Sh.	Eg.		23	59		II.	Oc.	Re.		15	31		II.*	Oc.	Re.	
	9	43		I.	Tr.	Eg.	19	0	26		I.	Tr.	Eg.		16	11		III.*	Oc.	Re.	
9	3	21	27.6	I.	Ec.	Dis.		18	12	56.1	I.	Ec.	Dis.		30	9	04	31.7	I.	Ec.	Dis.
	6	54		I.	Oc.	Re.		21	38		I.	Oc.	Re.		12	20		I.*	Oc.	Re.	
	21	31		II.	Sh.	In.	20	13	28		II.*	Sh.	In.		13	00	44.4	IV.*	Ec.	Dis.	
10	0	11		II.	Tr.	In.		15	27		I.*	Sh.	In.		16	45	07.8	IV.	Ec.	Re.	
	0	19		II.	Sh.	Eg.		15	51		II.*	Tr.	In.		22	45		IV.	Oc.	Dis.	
	0	36		I.	Sh.	In.		16	15		I.	Tr.	In.		31	1	32		IV.	Oc.	Re.
	1	53		I.	Tr.	In.		16	36		I.	Tr.	In.		5	24		II.	Sh.	In.	
	2	52		II.	Tr.	Eg.		17	45		I.	Sh.	Eg.		6	17		I.	Sh.	In.	
	2	55		I.	Sh.	Eg.		18	32		II.	Tr.	Eg.		7	17		II.	Tr.	In.	
	4	10		I.	Tr.	Eg.		18	53		I.	Tr.	Eg.		7	28		II.	Sh.	Eg.	
	21	50	05.2	I.	Ec.	Dis.	21	12	41	34.6	I.*	Ec.	Dis.		8	10		I.	Sh.	Eg.	
11	1	21		I.	Oc.	Re.		16	05		I.*	Oc.	Re.		9	34		I.	Tr.	Eg.	
	10	51		III.	Sh.	In.	22	4	56	31.9	III.	Ec.	Dis.		10	08		II.*	Tr.	Eg.	
	14	16		III.*	Sh.	Eg.		5	16		IV.	Sh.	In.								
	16	03		III.*	Tr.	In.		8	10	27.5	III.	Ec.	Re.								





NOTE.—In., denotes ingress; Eg., egress; Dis., disappearance; Re., reappearance; Ec., eclipse.

Oc., denotes occultation; Tr., transit of the satellite; Sh., transit of the shadow; * Visible at Washington.

WASHINGTON MEAN TIME.

JULY.

Phases of the Eclipses of the Satellites for an Inverting Telescope.

I.	d *		III.	d *	r *	
II.	d *		IV.	d *	r *	

Configurations at 13^h 30^m for an Inverting Telescope.

Day.	West.			East.		
1			1°	○	2° 3'	4°
2				○	1°	3° 4'
3		2°	1°	○	3°	4°
4	○ 3°		2°	○	1°	4°
5		3°	1°	○	4°	2°
6	○ 2° ○ 1°	3°	4°	○		
7		4°	2° 3'	○	1°	
8	4°		1°	○	2° 3'	
9	4°			○	1° 2°	3°
10	4°		2° 1°	○	3°	
11	4°		2°	○	3° 1°	
12		4°	3° 1°	○	2°	
13	○ 2°	3°	4°	○	1°	
14				○	4°	1° ●
15			1°	○	2° 3'	4°
16				○	1° 2°	3° 4°
17			2° 1°	○	3°	4°
18			2°	○	3° 1°	4°
19		3°	1°	○	2°	4°
20		3°		○	2° 1°	4°
21			32°	○	4°	1° ●
22				1° ○ 4°		
23		4°		○	1° 2°	3°
24		4°	1°	○	3°	
25	4°		2°	○	1°	
26	4°		3° 1°	○	2°	
27	4°	3°		○	1°	
28		4°	3° 2°	1° ○		
29	○ 1°	4°		○		2° ● 3° ●
30				○	1° 2° 3°	4° ●
31			1°	○	4°	3°

WASHINGTON MEAN TIME.

AUGUST.

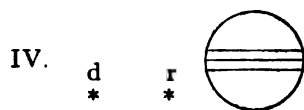
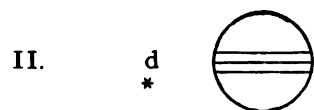
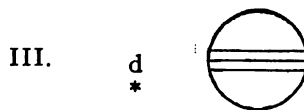
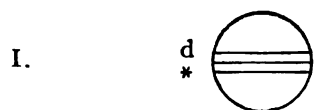
d	h	m	s	I.	Ec.	Dis.	d	h	m	s	I.	Sh.	Ec.	d	h	m	s	I.*	Sh.	Ec.
1	3	33	12.4	I.	Ec.	Dis.	10	23	27		I.	Sh.	Ec.	21	14	18		I.*	Sh.	Ec.
	6	47		I.	Ec.	Re.	11	0	06		II.	Sh.	Ec.		14	27		II.*	Tr.	In.
	22	54		III.	Sh.	In.		0	12		I.	Tr.	Ec.		14	49		I.*	Tr.	Ec.
2	0	09	08.6	II.	Ec.	Dis.		1	39		II.	Tr.	Ec.		16	03		II.*	Sh.	Ec.
	0	46		I.	Sh.	In.		18	25	05.4	I.	Ec.	Dis.		17	07		II.	Tr.	Ec.
	1	44		I.	Tr.	In.		21	26		I.	Ec.	Re.	22	9	17	08.1	I.*	Ec.	Dis.
	2	17		III.	Sh.	Ec.	12	15	37		I.*	Sh.	In.		12	04		I.*	Ec.	Re.
	2	53		III.	Tr.	In.		16	01	10.5	II.*	Ec.	Dis.	23	6	28		I.	Sh.	In.
	3	04		I.	Sh.	Ec.		16	22		I.*	Tr.	In.		6	58		I.	Tr.	In.
	4	01		I.	Tr.	Ec.		16	59	54.6	III.	Ec.	Dis.		7	53	27.9	II.	Ec.	Dis.
	4	41		II.	Ec.	Re.		17	55		I.	Sh.	Ec.		8	46		I.*	Sh.	Ec.
	5	57		III.	Tr.	Ec.		18	39		I.	Tr.	Ec.		9	15		I.*	Tr.	Ec.
	22	01	47.7	I.	Ec.	Dis.		20	08		II.	Ec.	Re.		10	56		III.*	Sh.	In.
3	1	13		I.	Ec.	Re.		23	06		III.	Ec.	Re.		11	31		II.*	Ec.	Re.
	18	43		II.	Sh.	In.	13	12	53	40.6	I.*	Ec.	Dis.		13	02		III.*	Tr.	In.
	19	14		I.	Sh.	In.		15	52		I.*	Ec.	Re.		14	16		III.*	Sh.	Ec.
	20	10		I.	Tr.	In.	14	10	05		I.*	Sh.	In.		16	06		III.*	Tr.	Ec.
	20	39		II.	Tr.	In.		10	40		II.*	Sh.	In.	24	3	45	47.9	I.	Ec.	Dis.
	21	29		II.	Sh.	Ec.		10	48		I.*	Tr.	In.		6	30		I.	Ec.	Re.
	21	33		I.	Sh.	Ec.		12	09		II.*	Tr.	In.		17	49		IV.	Sh.	In.
	22	27		I.	Tr.	Ec.		12	24		I.*	Sh.	Ec.		21	39		IV.	Sh.	Ec.
	23	19		II.	Tr.	Ec.		13	05		I.*	Tr.	Ec.		22	41		IV.	Tr.	In.
4	16	30	29.0	I.*	Ec.	Dis.		13	25		II.*	Sh.	Ec.	25	0	56		I.	Sh.	In.
	19	40		I.	Ec.	Re.		14	49		II.*	Tr.	Ec.		1	24		I.	Tr.	In.
5	12	58	13.5	III.*	Ec.	Dis.	15	7	22	24.0	I.	Ec.	Dis.		1	27		IV.	Tr.	Ec.
	13	26	28.2	II.*	Ec.	Dis.		10	19		I.*	Ec.	Re.		2	37		II.	Sh.	In.
	13	43		I.*	Sh.	In.	16	4	34		I.	Sh.	In.		3	15		I.	Sh.	Ec.
	14	36		I.*	Tr.	In.		5	14		I.	Tr.	In.		3	35		II.	Tr.	In.
	16	01		I.*	Sh.	Ec.		5	18	34.6	II.	Ec.	Dis.		3	41		I.	Tr.	Ec.
	16	10	16.7	III.*	Ec.	Re.		6	52		I.	Sh.	Ec.		5	22		II.	Sh.	Ec.
	16	36		III.*	Ec.	Dis.		6	55		III.	Sh.	In.		6	15		II.	Tr.	Ec.
	16	53		I.	Tr.	Ec.		7	15	54.8	IV.	Ec.	Dis.		22	14	34.0	I.	Ec.	Dis.
	17	50		II.	Ec.	Re.		7	31		I.	Tr.	Ec.	26	0	56		I.	Ec.	Re.
	19	40		III.	Ec.	Re.		9	16		II.*	Ec.	Re.		19	25		I.	Sh.	In.
6	10	59	03.0	I.*	Ec.	Dis.		9	43		III.*	Tr.	In.		19	50		I.	Tr.	In.
	14	07		I.*	Ec.	Re.		10	16		III.*	Sh.	Ec.		21	10	57.3	II.	Ec.	Dis.
7	8	02		II.	Sh.	In.		10	52	37.4	IV.*	Ec.	Re.		21	43		I.	Sh.	Ec.
	8	11		I.	Sh.	In.		12	46		III.*	Tr.	Ec.		22	07		I.	Tr.	Ec.
	9	03		I.	Tr.	In.		13	50		IV.*	Ec.	Dis.	27	0	39		II.	Ec.	Re.
	9	50		II.*	Tr.	In.		16	33		IV.*	Ec.	Re.		1	03	14.9	III.	Ec.	Dis.
	10	30		I.*	Sh.	Ec.	17	1	51	02.1	I.	Ec.	Dis.		5	47		III.	Ec.	Re.
	10	47		II.*	Sh.	Ec.		4	45		I.	Ec.	Re.		16	43	12.6	I.*	Ec.	Dis.
	11	20		I.*	Tr.	Ec.		23	02		I.	Sh.	In.		19	22		I.	Ec.	Re.
	12	30		II.*	Tr.	Ec.		23	40		I.	Tr.	In.	28	13	54		I.*	Sh.	In.
	23	32		IV.	Sh.	In.		23	59		II.	Sh.	In.		14	16		I.*	Tr.	In.
8	3	29		IV.	Sh.	Ec.		1	18		II.	Tr.	In.		15	56		II.*	Sh.	In.
	5	27	45.3	I.	Ec.	Dis.		1	21		I.	Sh.	Ec.		16	12		I.*	Sh.	Ec.
	8	03		IV.	Tr.	In.		1	57		I.	Tr.	Ec.		16	33		I.*	Tr.	Ec.
	8	33		I.	Ec.	Re.		2	44		II.	Sh.	Ec.		16	43		II.*	Tr.	In.
	10	47		IV.*	Tr.	Ec.		3	58		II.	Tr.	Ec.		18	41		II.	Sh.	Ec.
9	2	40		I.	Sh.	In.		20	19	46.5	I.	Ec.	Dis.		19	23		II.	Tr.	Ec.
	2	43	48.5	II.	Ec.	Dis.		23	11		I.	Ec.	Re.	29	11	11	59.1	I.*	Ec.	Dis.
	2	54		III.	Sh.	In.		17	31		I.	Sh.	In.		13	48		I.*	Ec.	Re.
	3	29		I.	Tr.	In.	19	18	06		I.	Tr.	In.	30	8	22		I.*	Sh.	In.
	4	58		I.	Sh.	Ec.		18	35	59.8	II.	Ec.	Dis.		8	42		I.*	Tr.	In.
	5	46		I.	Tr.	Ec.		19	49		I.	Sh.	Ec.		10	28	30.2	II.*	Ec.	Dis.
	6	16		III.	Sh.	Ec.		20	23		I.	Tr.	Ec.		10	40		I.*	Sh.	Ec.
	6	20		III.	Tr.	In.		21	01	20.6	III.	Ec.	Dis.		10	59		I.*	Tr.	Ec.
	6	59		II.	Ec.	Re.		22	24		II.	Ec.	Re.		13	45		II.*	Ec.	Re.
	9	24		III.*	Tr.	Ec.	20	2	28		III.	Ec.	Re.		14	57		III.*	Sh.	In.
	23	56	22.3	I.	Ec.	Dis.		14	48	23.2	I.*	Ec.	Dis.		16	19		III.*	Tr.	In.
10	3	00		I.	Ec.	Re.		17	37		I.	Ec.	Re.		18	16		III.	Sh.	Ec.
	21	08		I.	Sh.	In.	21	11	59		I.*	Sh.	In.		19	23		III.	Tr.	Ec.
	21	21		II.	Sh.	In.		12	32		I.*	Tr.	In.	31	5	40	40.8	I.	Ec.	Dis.
	21	56		I.	Tr.	In.		13	18		II.*	Sh.	In.		8	14		I.*	Ec.	Re.
	22	59		II.	Tr.	In.														

NOTE.—In., denotes ingress; Eg., egress; Dis., disappearance; Re., reappearance; Ec., eclipse.

Occ., denotes occultation; Tr., transit of the satellite; Sh., transit of the shadow; * Visible at Washington.

WASHINGTON MEAN TIME.

AUGUST.

Phases of the Eclipses of the Satellites for an Inverting Telescope.*Configurations at 12^h 30^m for an Inverting Telescope.*

Day.	West.				East.				
1			'2	○	'1	3'	'4		
2			'1	3'	○	'2		'4	
3		3'		○	'1			'4	
4		'3	2'	'1	○			4'	
5				'3	○	'1		4'	
6					○		'4	'1●	
7	○ 2'			'1	○	4'	'3		
8			'2	4'	○	'1	3'		
9		4'		'1	3'	○	'2		
10		4'	3'		○	'1	2'		
11	4'		'3	2'	'1	○			
12	'4			'3	2'	○	'1		
13	'4			'1	○	'3	2'		
14	○ '1	○ 2'	'4		○		'3		
15			'4	2'	○	'1	3'		
16	○ 3'			'1	4'	○	'2		
17			3'		○	'1	2'	'4	
18		'3		2'	'1	○		'4	
19			'3	2'	○	'1		'4	
20				'1	○	'3	2'	'4	
21					○	'1	2'	'3	4'
22		2'			○	'1	3'	4'	
23				'1	○	'3	2'	4'	
24		3'			○	4'	'1	2'	
25		'3		'1	○				
26		4'		'3	2'	○	'1		
27	4'			'1	○	'3	2'		
28	4'				○	'1	2'	'3	
29	'4		2'		○		3'		'1●
30	'4			'1	○	3'			'2●
31		'4	3'		○	'1	2'		

WASHINGTON MEAN TIME.

SEPTEMBER.

d	h	m	s		d	h	m	s		d	h	m	s		d	h	m	s		
1	2	51		I.	10	15	49		IV.*	21	5	13		III.	Tr.	Eg.				
	3	08		I.		20	33		I.		6	18		III.	Sh.	Eg.				
	5	09		I.		22	50		I.		11	08		I.*	Oc.	Dis.				
	5	15		II.	11	17	42		I.		13	39	35.0	I.*	Ec.	Re.				
	5	25		I.		17	42		I.		22	8	18		I.*	Tr.	In.			
	5	51		II.		20	00		I.			8	34		I.*	Sh.	In.			
	8	00		II.*		20	00		I.			10	35		I.*	Tr.	Eg.			
	8	31		II.*		21	12		II.			10	52		I.*	Sh.	Eg.			
2	0	09	28.7	I.		21	14		II.			12	37		II.*	Tr.	In.			
	1	32	03.5	IV.		23	54		II.			13	10		II.*	Sh.	In.			
	2	40		I.		23	57		II.			15	17		II.*	Tr.	Eg.			
	6	57		IV.		12	14	59	I.*			15	54		II.	Sh.	Eg.			
	21	19		I.		17	15	45.2	I.			23	5	35		I.	Oc.	Dis.		
	21	33		I.		18	12	08	I.*			8	08	26.2		I.*	Ec.	Re.		
	23	37		I.		12	11		I.*			24	2	44		I.	Tr.	In.		
	23	46	04.3	II.		14	25		I.*			3	03							
	23	50		I.		14	29		I.*			5	01							
3	2	52		II.		15	31		II.*			5	21							
	5	04	40.9	III.		18	17	12.9	II.			6	51							
	9	04		III.*		22	49		III.			10	10	20.4						
	18	38	09.2	I.		23	00		III.			15	44							
	21	06		I.		14	1	56	III.			20	14	24.9						
4	15	48		I.*		2	17		I.*			25	0	01						
	15	59		I.*		9	24		I.*			2	37	10.1						
	18	06		I.		11	44	28.6	I.*			21	10							
	18	16		I.		6	34		I.			21	32							
	18	34		II.		6	40		I.			23	27							
	18	59		II.		8	51		I.*			23	49							
	21	19		II.		8	58		I.*			26	1	45						
	21	39		II.		10	21		II.*			2	29							
5	13	06	57.3	I.*		10	31		II.*			4	26							
	15	32		I.*		13	01		II.*			5	13							
6	10	16		I.*		13	16		II.*			18	27							
	10	25		I.*		16	3	51	I.			21	06	01.0						
	12	34		I.*		6	13	18.2	I.			27	2	48						
	12	42		I.*		17	1	00	I.			5	56							
	13	03	42.6	II.*		1	08		I.			6	26							
	15	58		II.*		3	17		I.			9	59							
	18	58		III.		3	26		I.			15	36							
	19	34		III.		4	38		II.			16	00							
	22	17		III.		7	34	51.5	II.*			17	53							
	22	40		III.		12	28		III.*			18	18							
7	7	35	40.7	I.*		16	13	38.3	III.*			19	58							
	9	58		I.*		22	16		I.			23	28	09.6						
8	4	45		I.		18	0	42	00.5			28	5	22						
	4	51		I.		18	14		I.			7	04							
	7	03		I.		19	26		IV.			8	31							
	7	08		I.		19	37		I.			10	19							
	7	53		II.*		21	43		I.			12	53							
	8	06		II.*		21	55		I.			15	34	47.4						
	10	38		II.*		23	09	38.2	IV.			29	10	02						
	10	46		II.*		23	29		I.			10	29							
9	2	04	30.3	I.		23	50		II.			12	19							
	4	24		I.		19	2	09	II.			12	47							
	23	14		I.		2	35		II.			14	52							
	23	17		I.		16	42		I.			15	48							
10	1	32		I.		19	10	50.0	I.			17	34							
	1	34		I.		20	13	52	I.*			18	31							
	2	21	22.4	II.		14	06		I.*			30	7	19						
	5	05		II.		16	09		I.*			10	03	40.0						
	9	06	07.4	III.*		16	23		I.											
	12	07		IV.*		17	44		II.											
	12	20		III.*		20	52	34.7	II.											
	12	47		IV.*		21	2	05	III.											
	15	40		IV.*		3	02		III.											

NOTE.—In., denotes ingress; Eg., egress; Dis., disappearance; Re., reappearance; Ec., eclipse.

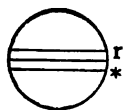
Oc., denotes occultation; Tr., transit of the satellite; Sh., transit of the shadow; * Visible at Washington.

WASHINGTON MEAN TIME.

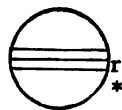
SEPTEMBER.

Phases of the Eclipses of the Satellites for an Inverting Telescope.

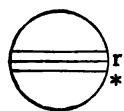
I.



III.



II.



IV.

*Configurations at 11^h 30^m for an Inverting Telescope.*

Day.	West.	East.
1	3°	'4 '1° 2° ○
2		'3 '2° ○ '4 '1°
3		'1° ○ '3 '2° '4
4		○ '1° 2° '3 '4
5	2°	'1° ○ '3° '4
6	○ '1°	'2° ○ '3° '4°
7	3°	○ '1° '2° '4°
8	3° '3° '1° 2°	○ '4°
9	'3° '2°	○ '1° '4°
10	○ '4°	'1° ○ '2° '3° ●
11	'4°	○ '1° 2° '3°
12	4°	2° '1° ○ '3°
13	4°	'2° ○ '1° '3°
14	4°	3° ○ '2° '1° ●
15	○ 2° '4°	3° '1° ○
16	'4° '3° '2°	○ '1°
17	'4° '1° '3°	○ '2°
18	'4°	○ '1° 2° '3°
19	2° '1°	○ '4° '3°
20	'2°	○ '1° '3° '4°
21		3° ○ '2° '4° '1° ●
22	3°	'1° ○ 2° '4°
23	'3° '2°	○ '1° '4°
24	'1° '3°	○ '2° '4°
25		○ '1° 2° '3° '4°
26	2° '1°	○ '4° '3°
27	'2° '4°	○ '1° '3°
28	4°	3° '1° ○ '2°
29	○ '1° 4°	3° '2° ○
30	4°	'3° 2° ○ '1°

WASHINGTON MEAN TIME.

OCTOBER.

d	h	m	s				d	h	m	s				d	h	m	s				
1	4	28		I.	Tr.	In.	12	0	30		II.	Oc.	Dis.	22	9	46		I.*	Tr.	In.*	
	4	58		I.	Sh.	In.		4	40	01.9	II.	Ec.	Re.		10	43		I.*	Sh.	In.	
	6	45		I.*	Tr.	Eg.		12	03		III.*	Tr.	In.		11	27	42.6	IV.*	Ec.	Re	
	7	16		I.*	Sh.	Eg.		15	07		III.	Sh.	In.		12	04		I.*	Tr.	Eg.	
	9	06		II.*	Oc.	Dis.		15	16		III.	Tr.	Eg.		13	01		I.*	Sh.	Eg.	
	12	46	03.0	II.*	Ec.	Re.		16	24		I.	Oc.	Dis.		16	00		II.	Oc.	Dis.	
	19	02		III.	Oc.	Dis.		18	20		III.	Sh.	Eg.		20	34	35.4	II.	Ec.	Re.	
2	0	15	55.4	III.	Ec.	Re.		19	25	28.1	I.	Ec.	Re.	23	5	17		III.	Oc.	Dis.	
	1	45		I.	Oc.	Dis.		13	32		I.*	Tr.	In.		7	05		I.*	Oc.	Dis.	
	4	32	25.4	I.	Ec.	Re.		14	19		I.*	Sh.	In.		8	32		III.*	Oc.	Re.	
	22	54		I.	Tr.	In.		15	50		I.	Tr.	Eg.		9	19	31.6	III.*	Ec.	Dis.	
	23	26		I.	Sh.	In.		16	37		I.	Sh.	Eg.		10	18	40.6	I.*	Ec.	Re.	
3	1	11		I.	Tr.	Eg.		17	19		IV.	Tr.	In.		12	19	49.6	III.*	Ec.	Re.	
	1	44		I.	Sh.	Eg.		19	28		II.	Tr.	In.		4	13		I.	Tr.	In.	
	4	01		II.	Tr.	In.		20	40		IV.	Tr.	Eg.	24	5	12		I.	Sh.	In.	
	5	07		II.	Sh.	In.		21	04		II.	Sh.	In.		6	31		I.*	Tr.	Eg.	
	6	43		II.*	Tr.	Eg.		22	11		II.	Tr.	Eg.		7	30		I.*	Sh.	Eg.	
	7	50		II.*	Sh.	Eg.		23	47		II.	Sh.	Eg.		11	01		II.*	Tr.	In.	
	20	12		I.	Oc.	Dis.		14	0	47	IV.	Sh.	In.		13	02		II.*	Sh.	In.	
	23	01	17.3	I.	Ec.	Re.		4	10		IV.	Sh.	Eg.		13	44		II.*	Tr.	Eg.	
4	17	20		I.	Tr.	In.		10	51		I.*	Oc.	Dis.		15	44		II.	Sh.	Eg.	
	17	55		I.	Sh.	In.		13	54	23.2	I.*	Ec.	Re.	25	1	32		I.	Oc.	Dis.	
	19	38		I.	Tr.	Eg.		15	7	59	I.*	Tr.	In.		4	47	35.6	I.	Ec.	Re.	
	20	13		I.	Sh.	Eg.		8	48		I.*	Sh.	In.		22	40		I.	Tr.	In.	
	22	14		II.	Oc.	Dis.		10	16		I.*	Tr.	Eg.		23	41		I.	Sh.	In.	
5	2	03	59.0	IV.*	Oc.	Dis.		11	06		I.*	Sh.	Eg.	26	0	58		I.	Tr.	Eg.	
	8	24		III.*	Tr.	In.		13	40		II.*	Oc.	Dis.		1	58		I.	Sh.	Eg.	
	11	06		III.*	Sh.	In.		17	58	10.6	II.	Ec.	Re.		5	11		II.	Oc.	Dis.	
	11	41		IV.*	Oc.	Re.		16	1	48	III.	Oc.	Dis.		9	52	48.1	II.*	Ec.	Re.	
	11	52		III.*	Tr.	Eg.		5	02		III.	Oc.	Re.		19	00		III.	Tr.	In.	
	14	08	25.5	IV.*	Ec.	Dis.		5	17	16.2	III.	Ec.	Dis.		19	59		I.	Oc.	Dis.	
	14	19		III.*	Sh.	Eg.		5	18		I.	Oc.	Dis.		22	16		III.	Tr.	Eg.	
	14	38		I.*	Oc.	Dis.		8	18	44.0	III.*	Ec.	Re.		23	12		III.	Sh.	In.	
	17	18	27.9	IV.	Ec.	Re.		8	23	11.2	I.*	Ec.	Re.		23	16	26.6	I.	Ec.	Re.	
	17	30	05.0	I.	Ec.	Re.		17	2	25	I.	Tr.	In.	27	2	23		III.	Sh.	Eg.	
6	11	46		I.*	Tr.	In.		3	17		I.	Sh.	In.		17	07		I.	Tr.	In.	
	12	24		I.*	Sh.	In.		4	43		I.	Tr.	Eg.		18	10		I.	Sh.	In.	
	14	04		I.*	Tr.	Eg.		5	34		I.	Sh.	Eg.		19	25		I.	Tr.	Eg.	
	14	42		I.*	Sh.	Eg.		8	39		II.*	Tr.	In.		20	27		I.	Sh.	Eg.	
	17	09		II.	Tr.	In.		10	24		II.*	Sh.	In.	28	0	13		II.	Tr.	In.	
	18	26		II.	Sh.	In.		11	22		II.*	Tr.	Eg.		2	21		II.	Sh.	In.	
	19	51		II.	Tr.	Eg.		13	06		II.*	Sh.	Eg.		2	56		II.	Tr.	Eg.	
	21	09		II.	Sh.	Eg.		23	44		I.	Oc.	Dis.		5	03		II.	Sh.	Eg.	
7	9	05		I.*	Oc.	Dis.		18	2	52	05.6	I.	Ec.	Re.		14	27		I.	Oc.	Dis.
	11	58	58.9	I.*	Ec.	Re.		20	52		I.	Tr.	In.		17	45	23.4	I.	Ec.	Re.	
	6	13		I.*	Tr.	In.		21	46		I.	Sh.	In.		29	11	34	I.*	Tr.	In.	
	6	53		I.*	Sh.	In.		23	10		I.	Tr.	Eg.		12	39		I.*	Sh.	In.	
	8	30		I.*	Tr.	Eg.		19	0	03		I.	Sh.	Eg.		13	52		I.	Tr.	Eg.
	9	10		I.*	Sh.	Eg.		2	49		II.	Oc.	Dis.		14	56		I.	Sh.	Eg.	
	11	22		II.*	Oc.	Dis.		7	16	18.4	II.*	Ec.	Re.		18	23		II.	Oc.	Dis.	
	15	22	00.0	II.	Ec.	Re.		15	29		III.	Tr.	In.		23	11	13.3	II.	Ec.	Re.	
	22	23		III.	Oc.	Dis.		18	11		I.	Oc.	Dis.	30	8	40		IV.*	Tr.	In.	
9	3	31		I.	Oc.	Dis.		18	44		III.	Tr.	Eg.		8	50		III.*	Oc.	Dis.	
	4	17	07.6	III.	Ec.	Re.		19	10		III.	Sh.	In.		8	54		I.*	Oc.	Dis.	
	6	27	45.8	I.*	Ec.	Re.		21	20	55.6	I.	Ec.	Re.		12	06		III.*	Oc.	Re.	
10	0	40		I.	Tr.	In.		22	21		III.	Sh.	Eg.		12	13		IV.*	Tr.	Eg.	
	1	22		I.	Sh.	In.		20	15	19	I.	Tr.	In.		12	14	13.4	I.*	Ec.	Re.	
	2	57		I.	Tr.	Eg.		16	14		I.	Sh.	In.		13	21	44.4	III.*	Ec.	Dis.	
	3	39		I.	Sh.	Eg.		17	37		I.	Tr.	Eg.		16	20	51.2	III.	Ec.	Re.	
	6	18		II.*	Tr.	In.		18	32		I.	Sh.	Eg.		19	08		IV.	Sh.	In.	
	7	45		II.*	Sh.	In.		21	50		II.	Tr.	In.		22	21		IV.	Sh.	Eg.	
	9	01		II.*	Tr.	Eg.		23	43		II.	Sh.	In.		31	6	02	I.*	Tr.	In.	
	10	28		II.*	Sh.	Eg.		21	0	33	II.	Tr.	Eg.		7	07		I.*	Sh.	In.	
	21	58		I.	Oc.	Dis.		2	25		II.	Sh.	Eg.		8	20		I.*	Tr.	Eg.	
11	0	56	39.1	I.	Ec.	Re.		12	38		I.*	Oc.	Dis.		9	25		I.*	Sh.	Eg.	
	19	06		I.	Tr.	In.		15	49	51.3	I.	Ec.	Re.		13	26		II.*	Tr.	In.	
	19	50		I.	Sh.	In.		23	19		IV.	Oc.	Dis.		15	40		II.	Sh.	In.	
	21	23		I.	Tr.	Eg.		22	2	48	IV.	Oc.	Re.		16	09		II.	Tr.	Eg.	
	22	08		I.	Sh.	Eg.		8	28	05.6	IV.*	Ec.	Dis.		18	22		II.	Sh.	Eg.	

NOTE.—In., denotes ingress; Eg., egress; Dis., disappearance; Re., reappearance; Ec., eclipse.

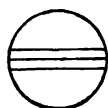
Oc., denotes occultation; Tr., transit of the satellite; Sh., transit of the shadow; * Visible at Washington.

WASHINGTON MEAN TIME.

OCTOBER.

Phases of the Eclipses of the Satellites for an Inverting Telescope.

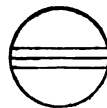
I.



r

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III.



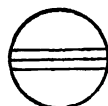
d

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II.



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IV.



d

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r

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Configurations at 10^h 00^m for an Inverting Telescope.

Day.	West.			East.		
1	4		'3 1'	○		'2 ●
2	4			○	'1 '3 2'	
3		4	1' 2'	○		'3
4			4 '2	○	1' 3'	
5	○ 3'		'1	○	'2	'4 ●
6		3'		○	1' 2' 4'	
7		'3	2'	○		'4 '1 ●
8			'3 1' 2'	○		'4
9				○	'1 '3 '2	'4
10			1' 2'	○	'3	4'
11			'2	○	1' 3' 4'	
12			'1	○	3' '2 4'	
13		3'		○	4' 1' 2'	
14		'3	2' 4'	'1 ○		
15	○ 1'	4'	'3 '2	○		
16	4'			○	'1 '3 '2	
17	○ 2' 4'		1'	○		'3
18	4		'2	○	'1	3'
19	4		'1	○		
20		4	3'	○	1' 2'	
21		3'	2' 4' '1	○		
22	○ 1'		'3 '2	○		'4 ●
23				○	'2 '4	'3 ● '1 ●
24			1'	○ 2'	'3	'4
25		'2		○	'1	3'
26		1'		○	'2 3'	4'
27		3'		○	1' 2'	4'
28		3'	2' '1	○		4'
29		'3	'2	○	1' 4'	
30	○ 4'			○	'2	'3 ● '1 ●
31		4'	1'	○ 2'	'3	

WASHINGTON MEAN TIME.

NOVEMBER.

d	h	m	s				d	h	m	s				d	h	m	s			
1	3	21		I.	Oc.	Dis.	11	7	37		II.*	Sh.	In.	21	13	54		I.	Tr.	Eg.
	6	43	08.9	I.*	Ec.	Re.		7	51		II.*	Tr.	Eg.		15	12		I.	Sh.	Eg.
2	0	29		I.	Tr.	In.		10	18		II.*	Sh.	Eg.		20	53		II.	Tr.	In.
	1	36		I.	Sh.	In.		18	07		I.	Oc.	Dis.		23	34		II.	Sh.	In.
	2	47		I.	Tr.	Eg.		21	36	33.7	I.	Ec.	Re.		23	38		II.	Tr.	Eg.
	3	54		I.	Sh.	Eg.	12	15	15		I.	Tr.	In.	22	2	15		II.	Sh.	Eg.
	7	35		II.*	Oc.	Dis.		16	30		I.	Sh.	In.		8	56		I.*	Oc.	Dis.
	12	29	31.6	II.*	Ec.	Re.		17	33		I.	Tr.	Eg.		12	29	57.5	I.	Ec.	Re.
	21	49		I.	Oc.	Dis.		18	47		I.	Sh.	Eg.	23	6	04		I.*	Tr.	In.
	22	37		III.	Tr.	In.		23	15		II.	Oc.	Dis.		7	23		I.*	Sh.	In.
3	1	12	00.5	I.	Ec.	Re.	13	4	25	09.2	II.	Ec.	Re.		8	22		I.*	Tr.	Eg.
	1	53		III.	Tr.	Eg.		12	35		I.	Oc.	Dis.		9	40		I.*	Sh.	Eg.
	3	15		III.	Sh.	In.		16	05	24.9	I.	Ec.	Re.		15	02		II.	Oc.	Dis.
	6	24		III.*	Sh.	Eg.		16	12		III.	Oc.	Dis.		20	20	55.9	II.	Ec.	Re.
	18	57		I.	Tr.	In.		19	30		III.	Oc.	Re.	24	3	24		I.	Oc.	Dis.
	20	05		I.	Sh.	In.		21	26	38.3	III.	Ec.	Dis.		6	58	49.8	I.*	Ec.	Re.
	21	14		I.	Tr.	Eg.	14	0	23	19.7	III.	Ec.	Re.		8	08		IV.*	Oc.	Dis.
	22	23		I.	Sh.	Eg.		9	43		I.*	Tr.	In.		9	56		III.*	Tr.	In.
4	2	40		II.	Tr.	In.		10	59		I.*	Sh.	In.		11	53		IV.*	Oc.	Re.
	4	59		II.	Sh.	In.		12	01		I.*	Tr.	Eg.		13	15		III.	Tr.	Eg.
	5	23		II.*	Tr.	Eg.		13	16		I.	Sh.	Eg.		15	23		III.	Sh.	In.
	7	41		II.*	Sh.	Eg.		18	22		II.	Tr.	In.		18	29		III.	Sh.	Eg.
	16	16		I.	Oc.	Dis.		20	56		II.	Sh.	In.		21	10	59.1	IV.	Ec.	Dis.
	19	40	57.6	I.	Ec.	Re.		21	06		II.	Tr.	Eg.		23	46	54.1	IV.	Ec.	Re.
5	13	24		I.	Tr.	In.		23	37		II.	Sh.	Eg.	25	0	32		I.	Tr.	In.
	14	34		I.	Sh.	In.	15	7	03		I.*	Oc.	Dis.		1	52		I.	Sh.	In.
	15	42		I.	Tr.	Eg.		10	34	19.6	I.*	Ec.	Re.		2	50		I.	Tr.	Eg.
	16	52		I.	Sh.	Eg.	16	1	03		IV.	Tr.	In.		4	09		I.	Sh.	Eg.
	20	48		II.	Oc.	Dis.		4	11		I.	Tr.	In.		10	10		II.*	Tr.	In.
6	1	48	05.0	II.	Ec.	Re.		4	46		IV.	Tr.	Eg.		12	52		II.	Sh.	In.
	10	44		I.*	Oc.	Dis.		5	28		I.*	Sh.	In.		12	55		II.	Tr.	Eg.
	12	28		III.*	Oc.	Dis.		6	29		I.*	Tr.	Eg.		15	33		II.	Sh.	Eg.
	14	09	48.3	I.	Ec.	Re.		7	45		I.*	Sh.	Eg.		21	53		I.	Oc.	Dis.
	15	46		III.	Oc.	Re.		12	30		II.	Oc.	Dis.	26	1	27	47.1	I.	Ec.	Re.
	17	24	06.0	III.	Ec.	Dis.		13	30		IV.	Sh.	In.		19	01		I.	Tr.	In.
	20	22	00.6	III.	Ec.	Re.		16	32		IV.	Sh.	Eg.		20	21		I.	Sh.	In.
7	7	52		I.*	Tr.	In.		17	43	36.1	II.	Ec.	Re.		21	19		I.	Tr.	Eg.
	9	03		I.*	Sh.	In.	17	1	31		I.	Oc.	Dis.		22	38		I.	Sh.	Eg.
	10	10		I.*	Tr.	Eg.		5	03	12.9	I.	Ec.	Re.	27	4	18		II.	Oc.	Dis.
	11	20		I.*	Sh.	Eg.		6	04		III.*	Tr.	In.		7	03		II.*	Oc.	Re.
	15	12		IV.	Oc.	Dis.		9	23		III.*	Tr.	Eg.		7	03	56.7	II.*	Ec.	Dis.
	15	53		II.	Tr.	In.		11	21		III.*	Sh.	In.		9	39	52.7	II.*	Ec.	Re.
	18	18		II.	Sh.	In.		14	27		III.	Sh.	Eg.		16	21		I.	Oc.	Dis.
	18	37		II.	Tr.	Eg.		22	39		I.	Tr.	In.		19	56	38.8	I.	Ec.	Re.
	18	51		IV.	Oc.	Re.		23	57		I.	Sh.	In.		23	55		III.	Oc.	Dis.
	21	00		II.	Sh.	Eg.	18	0	57		I.	Tr.	Eg.	28	3	14		III.	Oc.	Re.
8	2	49	24.7	IV.	Ec.	Dis.		2	14		I.	Sh.	Eg.		5	32	38.2	III.*	Ec.	Dis.
	5	12		I.	Oc.	Dis.		7	37		II.*	Tr.	In.		8	26	50.8	III.*	Ec.	Re.
	5	37	41.5	IV.*	Ec.	Re.		10	15		II.*	Sh.	In.		13	29		I.	Tr.	In.
	8	38	44.0	I.*	Ec.	Re.		10	22		II.*	Tr.	Eg.		14	50		I.	Sh.	In.
9	2	19		I.	Tr.	In.		12	56		II.	Sh.	Eg.		15	47		I.	Tr.	Eg.
	3	32		I.	Sh.	In.		19	59		I.	Oc.	Dis.		17	07		I.	Sh.	Eg.
	4	37		I.	Tr.	Eg.		23	32	10.6	I.	Ec.	Re.		23	27		II.	Tr.	In.
	5	49		I.*	Sh.	Eg.	19	17	07		I.	Tr.	In.	29	2	11		II.	Sh.	In.
	10	01		II.*	Oc.	Dis.		18	25		I.	Sh.	In.		2	12		II.	Tr.	Eg.
	15	06	27.7	II.	Ec.	Re.		19	26		I.	Tr.	Eg.		4	52		II.	Sh.	Eg.
	23	39		I.	Oc.	Dis.		20	43		I.	Sh.	Eg.	30	7	58		I.*	Oc.	Dis.
10	2	18		III.	Tr.	In.	20	1	46		II.	Oc.	Dis.		10	50		I.	Ec.	Re.
	3	07	36.5	I.	Ec.	Re.		7	02	25.4	II.*	Ec.	Re.		14	25	34.1	I.*	Tr.	In.
	5	36		III.*	Tr.	Eg.		14	28		I.	Oc.	Dis.		9	19		I.*	Sh.	In.
	7	18		III.*	Sh.	In.		18	01	02.0	I.	Ec.	Re.		10	16		I.*	Tr.	Eg.
	10	26		III.*	Sh.	Eg.		20	01		III.	Oc.	Dis.		11	36		I.*	Sh.	Eg.
	20	47		I.	Tr.	In.		23	20		III.	Oc.	Re.		17	36		II.	Oc.	Dis.
	22	01		I.	Sh.	In.	21	1	29	50.4	III.	Ec.	Dis.		20	21		II.	Oc.	Re.
	23	05		I.	Tr.	Eg.		4	25	17.8	I.	Ec.	Re.		20	22	36.4	II.	Ec.	Dis.
11	0	18		I.	Sh.	Eg.		11	36		I.*	Tr.	In.		22	58	26.4	II.	Ec.	Re.
	5	07		II.	Tr.	In.		12	54		I.	Sh.	In.							





NOTE.—In., denotes ingress, Eg., egress; Dis., disappearance; Re., reappearance; Ec., eclipse.

Oc., denotes occultation; Tr., transit of the satellite; Sh., transit of the shadow; * Visible at Washington.

WASHINGTON MEAN TIME.

NOVEMBER.

Phases of the Eclipses of the Satellites for an Inverting Telescope.

I.		r *	III.		d * r *
II.		r *	IV.		d * r *

Configurations at 9^h 00^m for an Inverting Telescope.

Day.	West.					East.			
1	4'	2'			○	'1	3'		
2	4'		1'		○	3'		'2 ●	
3	4'		3'		○	'1 2'			
4	'4	3'	'1 2'		○				
5	'4	'3	'2		○	1'			
6		'4	'1		○	'2			
7	○ 1'		'4		○	2'	'3		
8		2'			○	'1	'4	'3	
9			1'	'2	○	3'	'4		
10			3'		○	'1 2'		'4	
11		3'	'1 2'		○			'4	
12		'3	'2		○	1'		4'	
13			'3 1		○	'2		4'	
14					○	1' 2' 3'	4'		
15		2'			○	4'	'3	'1 ●	
16				4' 1' 2'	○		3'		
17	○ 3'	4'			○	'1	'2		
18	○ 2'	4'	3'	1'	○				
19	4'	'3	'2		○	1'			
20	'4		'3 1		○	'2			
21	'4				○	1' 3 2'			
22		'4	2'		○		'3	'1 ●	
23			'4	'2 1'	○		3'		
24					○	'1	'2	'4 ●	
25		3'	1'		○	2'	'4		
26		'3	'2		○	'1		'4	
27			'3 1		○			'4 '2 ●	
28					○	1' 2'		'4	
29			2' 1'		○		'3	4'	
30	○ 1'		'2		○		3'	4'	

WASHINGTON MEAN TIME.

DECEMBER.

d	h	m	s				d	h	m	s				d	h	m	s			
1	5	18		I.*	Oc.	Dis.	11	1	10		I.	Tr.	Eg.	20	2	17		IV.	Sh.	In.
	8	54	26.4	I.*	Ec.	Re.		2	09		IV.	Oc.	Dis.		4	54		IV.	Sh.	Eg.
	13	52		III.	Tr.	In.		2	29		I.	Sh.	Eg.		7	23		II.*	Tr.	In.
	17	11		III.	Tr.	Eg.		5	57		IV.*	Oc.	Re.		10	04		II.*	Sh.	In.
	19	26		III.	Sh.	In.		9	32		II.*	Oc.	Dis.		10	08		II.*	Tr.	Eg.
	22	30		III.	Sh.	Eg.		12	17		II.	Oc.	Re.		12	43		II.	Sh.	Eg.
2	2	27		I.	Tr.	In.		12	19	46.0	II.	Ec.	Dis.		16	38		I.	Oc.	Dis.
	3	48		I.	Sh.	In.		14	55	18.0	II.	Ec.	Re.		20	12	16.1	I.	Ec.	Re.
	4	45		I.	Tr.	Eg.		15	33	34.0	IV.	Ec.	Dis.		21	13	47	I.	Tr.	In.
	6	05		I.*	Sh.	Eg.		17	55	44.0	IV.	Ec.	Re.		15	07		I.	Sh.	In.
	12	45		II.	Tr.	In.		20	12		I.	Oc.	Dis.		16	05		I.	Tr.	Eg.
	15	30		II.	Sh.	In.		23	47	49.7	I.	Ec.	Re.		17	23		I.	Sh.	Eg.
	15	30		II.	Tr.	Eg.	12	7	58		III.*	Oc.	Dis.		22	1	32	II.	Oc.	Dis.
	18	11		II.	Sh.	Eg.		11	17		III.	Oc.	Re.		6	51	54.1	II.*	Ec.	Re.
	18	34		IV.	Tr.	In.		13	38	15.2	III.	Ec.	Dis.		11	08		I.	Oc.	Dis.
	22	21		IV.	Tr.	Eg.		16	29	55.4	III.	Ec.	Re.		14	41	06.9	I.	Ec.	Re.
	23	47		I.	Oc.	Dis.		17	20		I.	Tr.	In.		23	2	09	III.	Tr.	In.
3	3	23	23.6	I.	Ec.	Re.		18	42		I.	Sh.	In.		5	28		III.*	Tr.	Eg.
	7	54		IV.*	Sh.	In.		19	39		I.	Tr.	Eg.		7	35		III.*	Sh.	In.
	10	44		IV.*	Sh.	Eg.		20	58		I.	Sh.	Eg.		8	16		I.*	Tr.	In.
	20	56		I.	Tr.	In.		4	43		II.	Tr.	In.		9	36		I.*	Sh.	In.
	22	17		I.	Sh.	In.		7	26		II.*	Sh.	In.		10	35		I.	Tr.	Eg.
	23	14		I.	Tr.	Eg.		7	28		II.*	Tr.	Eg.		11	36		III.	Sh.	Eg.
4	0	34		I.	Sh.	Eg.		10	07		II.*	Sh.	Eg.		11	52		I.	Sh.	Eg.
	6	54		II.*	Oc.	Dis.		14	41		I.	Oc.	Dis.		20	43		II.	Tr.	In.
	9	39		II.*	Oc.	Re.		18	16	44.1	I.	Ec.	Re.		23	22		II.	Sh.	In.
	9	41	46.5	II.*	Ec.	Dis.		14	11	50	I.	Tr.	In.		23	28		II.	Tr.	Eg.
	12	17	30.5	II.	Ec.	Re.		13	10		I.	Sh.	In.		24	2	01	II.	Sh.	Eg.
	18	16		I.	Oc.	Dis.		14	08		I.	Tr.	Eg.		5	37		I.*	Oc.	Dis.
	21	52	15.1	I.	Ec.	Re.		15	27		I.	Sh.	Eg.		9	10	02.1	I.*	Ec.	Re.
5	3	54		III.	Oc.	Dis.		22	51		II.	Oc.	Dis.		25	2	46	I.	Tr.	In.
	7	14		III.*	Oc.	Re.		1	36		II.	Oc.	Re.		4	04		I.	Sh.	In.
	9	35	43.9	III.*	Ec.	Dis.		1	38	30.6	II.	Ec.	Dis.		5	04		I.	Tr.	Eg.
	12	28	40.7	III.	Ec.	Re.		4	13	56.4	II.	Ec.	Re.		6	21		I.*	Sh.	Eg.
	15	24		I.	Tr.	In.		9	10		I.*	Oc.	Dis.		14	54		II.	Oc.	Dis.
	16	46		I.	Sh.	In.		12	45	35.5	I.	Ec.	Re.		20	11	17.2	II.	Ec.	Re.
	17	42		I.	Tr.	Eg.		21	59		III.	Tr.	In.		26	0	07	I.	Oc.	Dis.
	19	03		I.	Sh.	Eg.		1	18		III.	Tr.	Eg.		3	38	52.3	I.	Ec.	Re.
6	2	04		II.	Tr.	In.		3	32		III.	Sh.	In.		16	16		III.	Oc.	Dis.
	4	49		II.	Sh.	In.		6	19		I.*	Tr.	In.		19	34		III.	Oc.	Re.
	4	49		II.	Tr.	Eg.		6	34		III.*	Sh.	Eg.		21	16		I.	Tr.	In.
	7	30		II.*	Sh.	Eg.		7	40		I.*	Sh.	In.		21	43	06.7	III.	Ec.	Dis.
	12	45		I.	Oc.	Dis.		8	37		I.*	Tr.	Eg.		22	33		I.	Sh.	In.
	16	21	10.1	I.	Ec.	Re.		9	56		I.*	Sh.	Eg.		23	34		I.	Tr.	Eg.
7	9	53		I.*	Tr.	In.		18	03		II.	Tr.	In.		27	0	32	III.	Ec.	Re.
	11	14		I.	Sh.	In.		20	45		II.	Sh.	In.		0	50		I.	Sh.	Eg.
	12	11		I.	Tr.	Eg.		20	48		II.	Tr.	Eg.		10	04		II.	Tr.	In.
	13	31		I.	Sh.	Eg.		23	25		II.	Sh.	Eg.		12	41		II.	Sh.	In.
	20	12		II.	Oc.	Dis.		17	3	40	I.	Oc.	Dis.		12	49		II.	Tr.	Eg.
	22	57		II.	Oc.	Re.		7	14	31.6	I.*	Ec.	Re.		13	20		II.	Sh.	Eg.
	23	00	29.0	II.	Ec.	Dis.		18	0	48	I.	Tr.	In.		18	36		I.	Oc.	Dis.
8	1	36	07.0	II.	Ec.	Re.		2	09		I.	Tr.	Eg.		21	06		IV.	Oc.	Dis.
	7	14		I.*	Oc.	Dis.		3	06		I.	Sh.	In.		22	07	44.7	I.	Ec.	Re.
	10	50	01.9	I.*	Ec.	Re.		4	25		I.	Sh.	Eg.		0	51		IV.*	Oc.	Re.
	17	53		III.	Tr.	In.		12	12		II.	Oc.	Dis.		9	57	43.1	IV.*	Ec.	Dis.
	21	12		III.	Tr.	Eg.		14	57		I.	Sh.	Eg.		12	04	24.7	I.	Tr.	In.
	23	29		III.	Sh.	In.		14	57	54.1	II.	Oc.	Re.		17	02		I.	Sh.	In.
9	2	32		III.	Sh.	Eg.		17	33	13.7	II.	Ec.	Dis.		18	03		I.	Tr.	Eg.
	4	22		I.	Tr.	In.		22	09		I.	Oc.	Dis.		19	19		I.	Sh.	Eg.
	5	43		I.*	Sh.	In.		12	05	22.6	I.	Ec.	Re.		4	16	59.0	II.*	Oc.	Dis.
	6	40		I.*	Tr.	Eg.		13	06		III.	Oc.	Dis.		9	29		I.	Ec.	Re.
	8	00		I.*	Sh.	Eg.		15	23		IV.	Tr.	In.		13	06	34.9	III.*	Tr.	In.
	15	23		II.	Tr.	In.		16	53		III.	Oc.	Re.		10	15		I.	Tr.	In.
	18	07		II.	Sh.	In.		17	40	38.5	IV.	Tr.	Eg.		11	31		I.	Sh.	In.
	18	08		II.	Tr.	Eg.		19	18		III.	Ec.	Dis.		12	38		III.	Tr.	In.
	20	48		II.	Sh.	Eg.		20	31	01.7	I.	Tr.	In.		13	48		I.	Sh.	Eg.
10	1	43		I.	Oc.	Dis.		20	38		III.	Ec.	Re.		14	38		III.	Sh.	Eg.
	5	18	58.5	I.*	Ec.	Re.		21	36		I.	Sh.	In.		23	27		II.	Tr.	In.
	22	51		I.	Tr.	Eg.		21	36		I.	Tr.	Eg.		2	11		II.	Sh.	Eg.
11	0	12		I.	Sh.	In.		22	54		I.	Sh.	Eg.		4	38		I.*	Sh.	Eg.
															7	35		I.	Oc.	Dis.
															11	05	29.2	I.	Ec.	Re.

NOTE.—In., denotes ingress; Eg., egress; Dis., disappearance; Re., reappearance; Ec., eclipse.

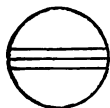
Oc., denotes occultation; Tr., transit of the satellite; Sh., transit of the shadow; * Visible at Washington.

WASHINGTON MEAN TIME.

DECEMBER.

Phases of the Eclipses of the Satellites for an Inverting Telescope.

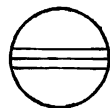
I.



r

*

III.



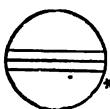
d

*

r

*

II.



d

*

r

*

IV.



d

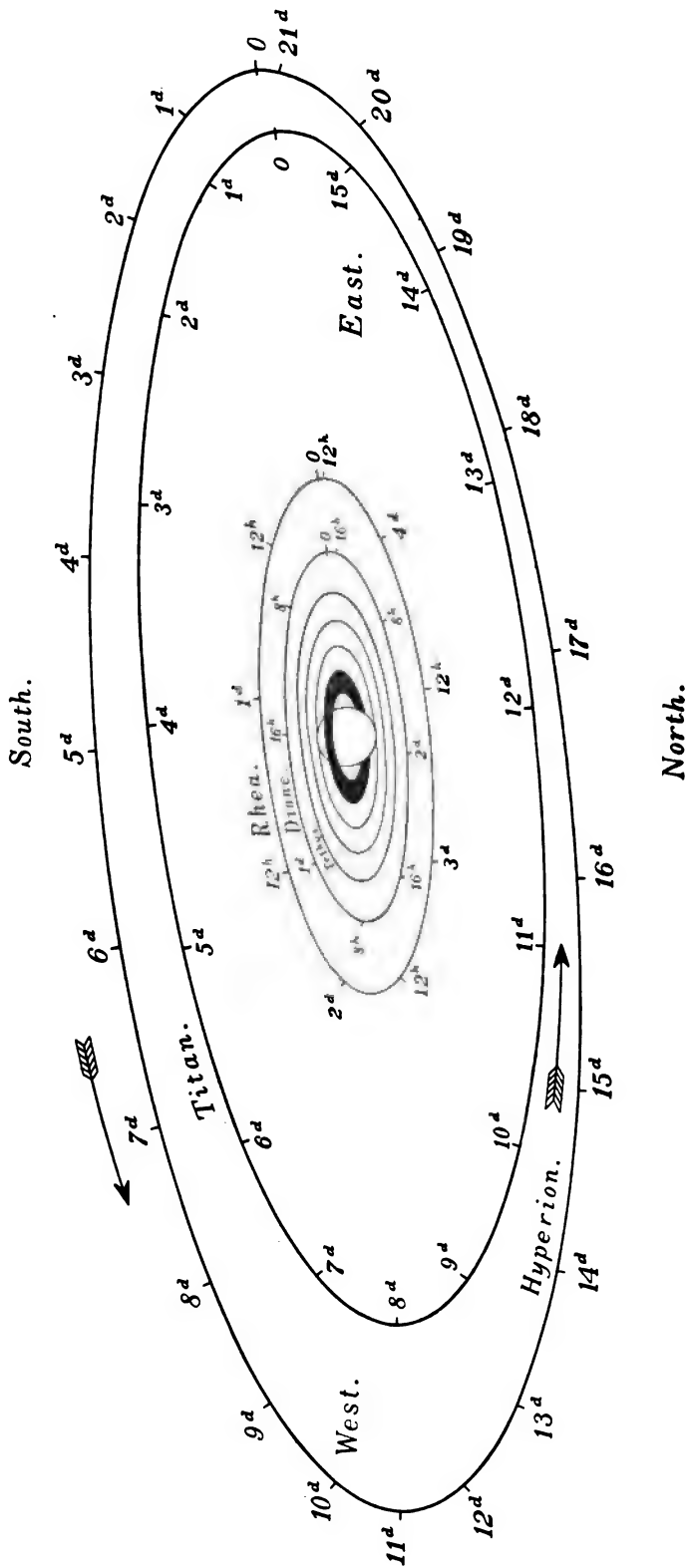
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Configurations at 8^h 00^m for an Inverting Telescope.

Day.	West.				East.			
1					○	3'	2'	4'
2			3'	I'	○	4'		
3		3'	2'	4'	○	I'		
4		4'	3'	I'	○			2'●
5	4'				○	3'	I'	2'
6	4'			1'	○		3'	
7	4'		2'		○	I'		3'
8	4'				○	3'2'		1'●
9		4'	3'	I'	○	2'		
10		3'	2'4'		○	I'		
11		3'	I'	2'	○	4'		
12					○	I'	2'	4'
13			I'	2'	○	3'		4'
14			2'		○	I'	3'	4'
15				I'	○	2'	3'	4'
16	○ I'		3'		○	2'		4'
17		3'	2'		○	I'		4'
18		3'	I'	2'	○		4'	
19			3'		○	4'	I'	2'
20	○ 2'		4'	I'	○	3'		
21		4'	2'		○	I'		3'
22	4'			I'	○	2'	3'	
23	4'		3'	2'	○	I'	2'	
24	4'		3'	2'	○			1'●
25		4'	3'	2' I'	○			
26		4'	3'		○	I'	2'	
27			1'4'		○	2'	3'	
28		2'			○	4' I'		3'
29			I'		○		3'	4'
30	○ 3'				○	I'	2'	4'
31		3'	2'		○			4' I'●



NAMES OF THE
SATELLITES

- I. Mimas.
- II. Enceladus.
- III. Tethys.
- IV. Dione.
- V. Rhea.
- VI. Titan.
- VII. Hyperion.
- VIII. Iapetus

APPARENT ORBITS OF THE SEVEN INNER SATELLITES OF SATURN.

AT OPPOSITION IN 1903.

AS SEEN IN AN INVERTING TELESCOPE.

MEAN SYNODIC
PERIODS.

	d	h
I.	0	22.6
II.	1	08.9
III.	1	21.3
IV.	2	17.7
V.	4	12.5
VI.	15	23.3
VII.	21	07.6
VIII.	79	22.1

WASHINGTON MEAN TIME OF GREATEST ELONGATION, ETC.

In the diagram on the preceding page, the points of the orbits marked "o" are those of the eastern elongation, as seen in an inverting telescope. The times of these elongations may be found from the following tables, and the apparent position of a satellite at any other time may be marked on the diagram by setting off on the proper orbit the elapsed interval in days and hours since the last eastern elongation. The orbits of the five inner satellites are regarded as circular, and the time of any elongation not given in the tables may be readily found from those given by adding or subtracting the proper multiple of the mean synodic period. Mimas can be seen only within a few hours of each elongation, and the time of every elongation visible at Washington is given. For the three outer satellites the eccentricity is taken into account, and the times both of the elongations and of the conjunctions are given. The following abbreviations are used in the tables:—

- E., East Elongation,
I., Inferior Conjunction (south of planet),
W., West Elongation,
S., Superior Conjunction (north of planet).

MIMAS.

Greatest Elongations Visible at Washington.

Apr. 29 15.8 E. 30 14.4 E. May 7 16.0 W. 8 14.6 W. 9 13.3 W. 15 16.3 E. 16 14.9 E. 17 13.5 E. 24 15.1 W. 25 13.7 W. 26 12.4 W. June 1 15.4 E. 2 14.0 E. 3 12.6 E. 9 15.6 W. 10 14.2 W. 11 12.8 W. 12 11.4 W.	June 17 15.8 E. 18 14.4 E. 19 13.0 E. 20 11.6 E. 25 16.0 W. 26 14.6 W. 27 13.2 W. 28 11.8 W. 29 10.5 W. July 4 14.8 E. 5 13.5 E. 6 12.1 E. 7 10.7 E. 8 09.3 E. 12 15.1 W. 13 13.7 W. 14 12.3 W. 15 10.9 W.	July 16 09.5 W. 20 15.3 E. 21 13.9 E. 22 12.5 E. 23 11.1 E. 24 09.7 E. 25 08.3 E. 28 15.5 W. 29 14.1 W. 30 12.7 W. 31 11.3 W. Aug. 1 10.0 W. 2 08.6 W. 5 15.7 E. 6 14.3 E. 7 12.9 E. 8 11.6 E. 9 10.2 E.	Aug. 10 08.8 E. 14 14.5 W. 15 13.2 W. 16 11.8 W. 17 10.4 W. 18 09.0 W. 19 07.6 W. 22 14.8 E. 23 13.4 E. 24 12.0 E. 25 10.6 E. 26 09.2 E. 27 07.8 E. 31 13.6 W. Sept. 1 12.2 W. 2 10.8 W. 3 09.5 W. 4 08.1 W.	Sept. 9 12.5 E. 10 11.1 E. 11 09.7 E. 12 08.3 E. 13 06.9 E. 18 11.3 W. 19 10.0 W. 20 08.6 W. 21 07.2 W. 26 11.6 E. 27 10.2 E. 28 08.8 E. 29 07.4 E. Oct. 5 10.5 W. 6 09.1 W. 7 07.7 W. 8 06.3 W. 13 10.8 E.	Oct. 14 09.4 E. 15 08.0 E. 16 06.6 E. 22 09.6 W. 23 08.3 W. 24 06.9 W. 30 10.0 E. 31 08.6 E. Nov. 1 07.2 E. 2 05.8 E. 8 08.9 W. 9 07.5 W. 10 06.1 W. 16 09.2 E. 17 07.8 E. 18 06.4 E. 26 06.7 W. 27 05.4 W.
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ENCELADUS.

May 1 01.0 E. 2 09.9 E. 3 18.8 E. 5 03.7 E. 6 12.6 E. 7 21.4 E. 9 06.3 E. 10 15.2 E. 12 00.1 E. 13 09.0 E.	May 14 17.8 E. 16 02.7 E. 17 11.6 E. 18 20.5 E. 20 05.4 E. 21 14.3 E. 22 23.1 E. 24 08.0 E. 25 16.9 E. 27 01.8 E.	May 28 10.7 E. 29 19.5 E. 31 04.4 E. June 1 13.3 E. 2 22.2 E. 4 07.1 E. 5 15.9 E. 7 00.8 E. 8 09.7 E. 9 18.6 E.	June 11 03.4 E. 12 12.3 E. 13 21.2 E. 15 06.1 E. 16 15.0 E. 17 23.8 E. 19 08.7 E. 20 17.6 E. 22 02.5 E. 23 11.4 E.	June 24 20.2 E. 26 05.1 E. 27 14.0 E. 28 22.9 E. 30 07.7 E. July 1 16.6 E. 3 01.5 E. 4 10.4 E. 5 19.2 E. 7 04.1 E.	July 8 13.0 E. 9 21.9 E. 11 06.7 E. 12 15.6 E. 14 00.5 E. 15 09.4 E. 16 18.2 E. 18 03.1 E. 19 12.0 E. 20 20.8 E.
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WASHINGTON MEAN TIME OF GREATEST ELONGATION.

ENCELADUS—(Continued).

July	d h	Aug.	d h	Sept.	d h	Sept.	d h	Oct.	d h	Nov.	d h
22	05.7 E.	11	18.9 E.	1	08.0 E.	21	21.3 E.	12	10.6 E.	2	00.0 E.
23	14.6 E.	13	03.7 E.	2	16.9 E.	23	06.1 E.	13	19.4 E.	3	08.8 E.
24	23.5 E.	14	12.6 E.	4	01.8 E.	24	15.0 E.	15	04.3 E.	4	17.7 E.
26	08.4 E.	15	21.5 E.	5	10.7 E.	25	23.9 E.	16	13.2 E.	6	02.6 E.
27	17.2 E.	17	06.4 E.	6	19.6 E.	27	08.8 E.	17	22.1 E.	7	11.5 E.
29	02.1 E.	18	15.2 E.	8	04.4 E.	28	17.7 E.	19	07.0 E.	8	20.4 E.
30	11.0 E.	20	00.1 E.	9	13.3 E.	30	02.6 E.	20	15.9 E.	10	05.3 E.
31	19.9 E.	21	09.0 E.	10	22.2 E.	Oct. 1	11.5 E.	22	00.8 E.	11	14.2 E.
Aug. 2	04.7 E.	22	17.9 E.	12	07.1 E.	2	20.4 E.	23	09.7 E.	12	23.1 E.
3	13.6 E.	24	02.7 E.	13	16.0 E.	4	05.2 E.	24	18.6 E.	14	08.0 E.
4	22.5 E.	25	11.6 E.	15	00.8 E.	5	14.1 E.	26	03.5 E.	15	16.9 E.
6	07.4 E.	26	20.5 E.	16	09.7 E.	6	23.0 E.	27	12.4 E.	17	01.8 E.
7	16.2 E.	28	05.4 E.	17	18.6 E.	8	07.9 E.	28	21.3 E.	18	10.7 E.
9	01.1 E.	29	14.3 E.	19	03.5 E.	9	16.8 E.	30	06.2 E.	19	19.6 E.
10	10.0 E.	30	23.1 E.	20	12.4 E.	11	01.7 E.	31	15.1 E.	21	04.5 E.

TETHYS.

May	d h	June	d h	July	d h	Aug.	d h	Sept.	d h	Oct.	d h
4	13.8 E.	7	13.3 E.	11	12.5 E.	14	11.7 E.	17	11.0 E.	21	10.6 E.
6	11.2 E.	9	10.6 E.	13	09.8 E.	16	09.0 E.	19	08.3 E.	23	07.9 E.
8	08.5 E.	11	07.9 E.	15	07.1 E.	18	06.3 E.	21	05.6 E.	25	05.2 E.
10	05.8 E.	13	05.2 E.	17	04.4 E.	20	03.6 E.	23	02.9 E.	27	02.6 E.
12	03.1 E.	15	02.4 E.	19	01.6 E.	22	00.8 E.	25	00.2 E.	28	23.9 E.
14	00.4 E.	16	23.7 E.	20	22.9 E.	23	22.1 E.	26	21.5 E.	30	21.2 E.
15	21.7 E.	18	21.0 E.	22	20.2 E.	25	19.4 E.	28	18.8 E.	Nov. 1	18.5 E.
17	19.0 E.	20	18.3 E.	24	17.5 E.	27	16.7 E.	30	16.2 E.	3	15.8 E.
19	16.3 E.	22	15.6 E.	26	14.8 E.	29	14.0 E.	Oct. 2	13.5 E.	5	13.2 E.
21	13.6 E.	24	12.9 E.	28	12.1 E.	31	11.3 E.	4	10.8 E.	7	10.5 E.
23	10.9 E.	26	10.2 E.	30	09.4 E.	Sept. 2	08.6 E.	6	08.1 E.	9	07.8 E.
25	08.2 E.	28	07.5 E.	Aug. 1	06.7 E.	4	05.9 E.	8	05.4 E.	11	05.1 E.
27	05.5 E.	30	04.8 E.	3	04.0 E.	6	03.2 E.	10	02.7 E.	13	02.4 E.
29	02.8 E.	July 2	02.1 E.	5	01.3 E.	8	00.5 E.	12	00.0 E.	14	23.8 E.
31	00.1 E.	3	23.4 E.	6	22.5 E.	9	21.8 E.	13	21.3 E.	16	21.1 E.
June 1	21.4 E.	5	20.6 E.	8	19.8 E.	11	19.1 E.	15	18.6 E.	18	18.4 E.
3	18.7 E.	7	17.9 E.	10	17.1 E.	13	16.4 E.	17	16.0 E.	20	15.8 E.
5	16.0 E.	9	15.2 E.	12	14.4 E.	15	13.7 E.	19	13.3 E.	22	13.1 E.

DIONE.

May	d h	June	d h	July	d h	Aug.	d h	Sept.	d h	Oct.	d h
1	15.1 E.	3	11.3 E.	6	07.2 E.	8	03.0 E.	9	22.8 E.	12	19.0 E.
4	08.8 E.	6	05.0 E.	9	00.8 E.	10	20.6 E.	12	16.5 E.	15	12.7 E.
7	02.5 E.	8	22.6 E.	11	18.5 E.	13	14.2 E.	15	10.2 E.	18	06.4 E.
9	20.2 E.	11	16.3 E.	14	12.1 E.	16	07.9 E.	18	03.8 E.	21	00.1 E.
12	13.9 E.	14	10.0 E.	17	05.8 E.	19	01.5 E.	20	21.5 E.	23	17.8 E.
15	07.6 E.	17	03.6 E.	19	23.4 E.	21	19.2 E.	23	15.2 E.	26	11.5 E.
18	01.3 E.	19	21.3 E.	22	17.1 E.	24	12.8 E.	26	08.9 E.	29	05.2 E.
20	18.9 E.	22	14.9 E.	25	10.7 E.	27	06.5 E.	29	02.5 E.	31	22.9 E.
23	12.6 E.	25	08.6 E.	28	04.4 E.	30	00.2 E.	Oct. 1	20.2 E.	Nov. 3	16.7 E.
26	06.3 E.	28	02.2 E.	30	22.0 E.	Sept. 1	17.8 E.	4	13.9 E.	6	10.4 E.
29	00.0 E.	30	19.9 E.	Aug. 2	15.7 E.	4	11.5 E.	7	07.6 E.	9	04.1 E.
31	17.6 E.	July 3	13.5 E.	5	09.3 E.	7	05.2 E.	10	01.3 E.	11	21.8 E.

RHEA.				TITAN.				HYPERION.			
	d	h			d	h			d		
May	3	19.7 E.	Aug.	11	03.5 E.	May	14	09.6 S.	Aug.	10	01.0 I.
	8	08.2 E.		15	15.8 E.		18	09.4 E.		13	23.9 W.
	12	20.6 E.		20	04.2 E.		22	12.3 I.		17	19.9 S.
	17	09.0 E.		24	16.5 E.		26	11.8 W.		21	19.6 E.
	21	21.4 E.		29	04.8 E.		30	08.2 S.		25	22.3 I.
	26	09.8 E.	Sept.	2	17.2 E.	June	3	07.8 E.		29	21.3 W.
	30	22.2 E.		7	05.6 E.		7	10.6 I.	Sept.	2	17.6 S.
June	4	10.6 E.		11	17.9 E.		11	10.0 W.		6	17.3 E.
	8	23.0 E.		16	06.3 E.		15	06.3 S.		10	20.0 I.
	13	11.3 E.		20	18.6 E.		19	05.8 E.		14	19.2 W.
	17	23.7 E.		25	07.0 E.		23	08.6 I.		18	15.6 S.
	22	12.0 E.		29	19.4 E.		27	08.0 W.		22	15.4 E.
	27	00.4 E.	Oct.	4	07.8 E.	July	1	04.0 S.		26	18.2 I.
July	1	12.7 E.		8	20.3 E.		5	03.5 E.		30	17.5 W.
	6	01.0 E.		13	08.7 E.		9	06.0 I.	Oct.	4	13.9 S.
	10	13.3 E.		17	21.2 E.		13	05.3 W.		8	14.0 E.
	15	01.6 E.		22	09.6 E.		17	01.4 S.		12	17.1 I.
	19	14.0 E.		26	22.1 E.		21	00.9 E.		16	16.4 W.
	24	02.3 E.		31	10.6 E.		25	03.4 I.		20	12.9 S.
	28	14.6 E.	Nov.	4	23.1 E.		29	02.6 W.		24	13.0 E.
Aug.	2	02.9 E.		9	11.6 E.	Aug.	1	22.7 S.		28	16.2 I.
	6	15.2 E.		14	00.1 E.		5	22.4 E.	Nov.	1	15.8 W.

IAPETUS.

May	d	8.8 W.	June	d	16.8 E.	July	d	26.3 W.	Sept.	d	2.8 E.	Oct.	d	12.8 W.	Nov.	d	21.3 E.
		28.9 S.	July		6.1 I.	Aug.		15.0 S.			22.3 I.	Nov.		2.0 S.	Dec.		11.4 I.

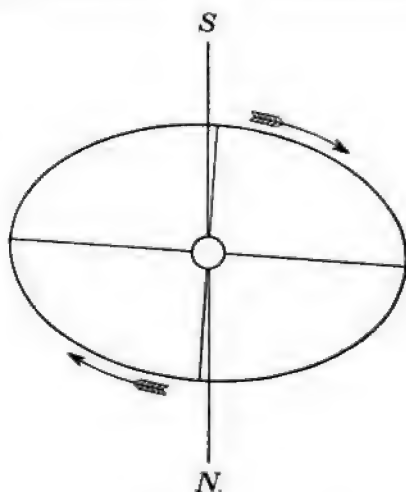
THE APPARENT ELEMENTS OF SATURN'S RINGS.

Greenwich Mean Noon.	a	b	p	l	l'	Earth's Longitude from Saturn counted on the Plane of the Rings from their Ascending Node on the—	
						Equator.	Ecliptic.
			Inclination of Northern Semi-Minor Axis to Circle of Declination from North to East.	The Elevation of the Earth above the Plane of the Rings.	The Elevation of the Sun above the Plane of the Rings.		
Jan.	0	34.33	12.64	+ 7 25.1	+ 21 36.8	+ 21 02.2	355 21.0
	20	34.16	12.16	7 24.8	20 51.6	20 51.4	357 44.1
Feb.	9	34.31	11.77	7 23.7	20 04.4	20 40.5	0 06.4
Mar.	1	34.78	11.50	7 22.0	19 18.7	20 29.4	2 18.6
	21	35.54	11.36	7 20.0	18 38.2	20 18.3	4 12.6
Apr.	10	36.56	11.36	+ 7 18.1	+ 18 06.6	+ 20 06.9	5 40.8
	30	37.77	11.54	7 16.8	17 47.0	19 55.4	6 36.9
May	20	39.06	11.87	7 16.3	17 41.9	19 43.8	6 56.7
June	9	40.28	12.35	7 17.0	17 51.7	19 32.0	6 38.9
	29	41.26	12.92	7 18.4	18 14.6	19 20.2	5 47.4
July	19	41.82	13.44	+ 7 20.2	+ 18 46.2	+ 19 08.1	4 31.2
Aug.	8	41.85	13.86	7 22.0	19 20.7	18 56.1	3 04.9
	28	41.34	14.04	7 23.4	19 51.2	18 43.7	1 45.9
Sept.	17	40.39	13.94	7 24.2	20 11.8	18 31.4	0 50.2
Oct.	7	39.18	13.61	7 24.5	20 19.7	18 18.8	0 29.1
	27	37.89	13.10	+ 7 24.2	+ 20 13.4	+ 18 06.2	0 47.4
Nov.	16	36.69	12.47	7 23.4	19 53.2	17 53.4	1 44.1
Dec.	6	35.67	11.81	7 21.9	19 20.4	17 40.5	3 13.9
	26	34.93	11.15	7 19.5	18 37.4	17 27.5	5 08.8
	31	34.78	10.99	+ 7 18.8	+ 18 25.3	+ 17 24.2	5 40.3

The factor to be multiplied by *a* and *b* to obtain the axes of—

The inner ellipse of the outer ring = 0.8801,	log factor = 9.9445
The outer ellipse of the inner ring = 0.8599,	log factor = 9.9344
The inner ellipse of the inner ring = 0.6650,	log factor = 9.8228
The inner ellipse of the dusky ring = 0.5130,	log factor = 9.7101

NOTE.—The positive sign of *l* indicates that the visible surface of the rings is the northern one.



Date.	Position Angle of Apsis.	Apparent Distance at Apsis.
Feb. 20,	81.8	16.6
Oct. 10,	87.9	16.4
Dec. 29,	86.1	16.9

APPARENT ORBIT OF THE SATELLITE OF NEPTUNE IN 1903,
AS SEEN IN AN INVERTING TELESCOPE.

WASHINGTON MEAN TIME OF GREATEST ELONGATION.

East.		West.		East.		West.		East.		West.	
d	h	d	h	d	h	d	h	d	h	d	h
Jan.	3 14.3	Jan.	6 12.9	Mar.	15 03.5	Mar.	18 02.1	Oct.	30 05.7	Oct.	27 07.2
	9 11.5		12 10.0		21 00.6		23 23.1	Nov.	5 02.8	Nov.	2 04.2
	15 08.6		18 07.2		26 21.6		29 20.1		10 23.8		8 01.3
	21 05.7		24 04.3	Apr.	1 18.7	Apr.	4 17.2		16 20.9		13 22.4
	27 02.8		30 01.4		7 15.7		10 14.2		22 18.0		19 19.5
Feb.	1 23.9	Feb.	4 22.5	Sept.	19 02.5	Sept.	16 04.0		28 15.1		25 16.6
	7 21.0		10 19.6		24 23.5		22 01.0	Dec.	4 12.2	Dec.	1 13.7
	13 18.1		16 16.7		30 20.5		27 22.0		10 09.4		7 10.8
	19 15.2		22 13.8	Oct.	6 17.5	Oct.	3 19.0		16 06.5		13 07.9
	25 12.3		28 10.9		12 14.5		9 16.0		22 03.6		19 05.0
Mar.	3 09.4	Mar.	6 07.9		18 11.6		15 13.0		28 00.7		25 02.2
	9 06.5		12 05.0		24 08.6		21 10.1		33 21.9		30 23.3

The above times are the instants of each passage of the satellite through the apsis of its apparent orbit. The position of the satellite at any other time may be found by measuring around the orbit from the apsis last passed through, bearing in mind that the radius vector of the satellite describes equal areas in equal times.

The period of the satellite of Neptune is $5^d 21.044^h$.

NOTE.—In the preceding diagrams the central circle represents the planet and is on the same scale as the orbits.

WASHINGTON MEAN TIME.

PLANETARY CONFIGURATIONS.

	d	h	m				d	h	m		
Jan.	1	18	58	♂ ♃	..... ♃ - 5 29		Mar.	28	18	-	♂
	3	08	-	⊕	in Perihelion.			30	14	47	♂ ♃
	4	19	-	♂ ♂	..... ♂ - 1 47			31	00	-	♂
	7	18	-	♀	in Aphelion.		Apr.	3	10	41	♂ ♃
	9	07	-	♂ ♂	..... ♂ - 0 58			10	01	46	♂ ♃
	11	13	15	♂ ♃	..... ♃ + 3 36			11	-	-	♂
	12	13	-	♂	in Aphelion.			12	10	-	♂ ♃
	17	04	-	♂	Greatest elong. E. 18 46			16	09	25	♂ ♃
	18	11	48	♂ ♃	..... ♂ + 3 35			16	18	-	♂
	18	19	-	♂	in ♄			20	03	18	♂ ♂
	20	16	-	♂ ♂	..... ♂ - 4 38			21	09	-	♂
	23	09	-	♂	in Perihelion.			23	01	04	♂ ♃
	23	10	-	♂	Stationary.			28	00	03	♂ ♃
	24	06	53	♂ ♃	..... ♂ - 4 38			29	11	27	♂ ♃
	24	19	-	♂ ♂	..... ♂ + 3 20			29	20	-	♂ ♂
	27	12	36	♂ ♂	..... ♂ - 5 18			30	05	-	♀
	28	19	02	♂ ♃	..... ♂ - 1 39			30	17	34	♂ ♃
	29	11	45	♂ ♃	..... ♃ - 5 50		May	1	16	-	♂
	29	13	14	♂ ♃	..... ♃ - 5 04			6	22	36	♂ ♃
	30	05	-	♂ ♂	..... ♂ - 0 44			9	21	-	♂
	30	11	-	♀	Greatest Hel. Lat. S.			10	09	-	♂
Feb.	1	20	-	♂ ♃	Inferior.			13	16	05	♂ ♃
	2	16	-	♂	Greatest Hel. Lat. N.			14	15	-	♂ ♂
	7	22	17	♂ ♃	..... ♃ + 3 45			17	12	38	♂ ♂
	12	20	-	♂ ♂	..... ♂ + 3 02			20	05	-	♂
	13	16	-	♂	Stationary.			20	18	59	♂ ♃
	15	05	42	♂ ♃	..... ♂ + 3 22			22	06	-	♀
	18	10	-	♂	Stationary.			22	10	-	♂
	18	23	-	♂ ♃	..... ♂ - 4 53			25	03	-	♂
	20	16	08	♂ ♃	..... ♂ - 4 53			26	22	30	♂ ♃
	24	02	00	♂ ♂	..... ♂ - 5 21			28	02	59	♂ ♃
	24	10	43	♂ ♃	..... ♂ - 4 35			29	06	53	♂ ♃
	26	04	-	♂	in ♄		June	2	22	-	♂ ♃
	26	08	46	♂ ♃	..... ♃ - 4 41			3	09	27	♂ ♃
	27	07	-	♂	Greatest elong. W. 26 59			4	08	-	♂
	28	16	27	♂ ♃	..... ♂ - 2 32			9	21	01	♂ ♃
Mar.	7	05	01	♂ ♃	..... ♃ + 3 56			13	10	-	♂ ♃
	8	09	-	♂	in Aphelion.			13	18	37	♂ ♂
	12	11	-	♂	Stationary.			14	23	-	♂
	14	09	31	♂ ♃	..... ♂ + 3 49			15	06	-	♂ ♃
	16	14	-	♂ ♃	..... ♂ - 5 03			17	08	58	♂ ♃
	18	01	-	♂ ♂	..... ♂ - 1 24			21	22	-	♂
	20	01	12	♂ ♃	..... ♂ - 5 03			23	00	58	♂ ♃
	21	02	-	♂	enters ♄, Spring com.			23	18	-	♂
	22	01	-	♂ ♃	..... ♃ + 3 55			24	14	35	♂ ♃
	23	15	19	♂ ♂	..... ♂ - 5 26			24	17	-	♂
	26	05	06	♂ ♃	..... ♃ - 4 19			25	12	-	♂ ♃
	27	05	33	♂ ♃	..... ♂ - 4 44			27	10	-	♂
	27	18	-	♀	in ♄			27	20	42	♂ ♃
	28	-	-	♂	Ann. eclips. invis. at Wash.		July	1	08	25	♂ ♃
	28	14	-	♂ ♃	..... ♂ - 0 09			2	11	-	♂
				♂	in Aphelion.						♂

WASHINGTON MEAN TIME.

PLANETARY CONFIGURATIONS.

July			Oct.		
d	h	m	d	h	m
6	05	-	3	21	42
7	00	52	5	-	-
9	07	-	6	06	-
10	21	46	7	14	-
12	02	-	9	12	-
13	18	-	9	17	-
14	04	-	11	06	-
14	17	36	12	04	24
17	07	-	14	07	-
18	08	-	17	02	39
22	02	51	18	10	-
23	17	24	18	14	12
25	23	-	23	22	-
26	23	33	24	05	37
28	15	-	24	06	06
29	15	-	24	09	-
29	16	11	24	14	-
Aug. 3	04	58	26	21	-
6	23	42	27	16	30
10	20	53	31	02	12
12	03	-	Nov. 7	10	-
18	13	55	8	09	38
20	13	-	9	12	-
21	02	-	14	19	43
23	19	55	17	02	-
24	04	43	18	07	04
24	20	-	20	17	04
27	06	57	20	21	-
27	23	-	22	11	47
30	10	47	24	03	39
31	08	-	27	07	-
31	12	-	27	11	30
Sept. 3	02	32	27	14	-
6	20	59	28	00	-
7	00	-	Dec. 5	16	25
11	13	-	7	08	-
12	04	-	8	06	-
14	22	25	11	03	-
15	01	-	14	06	26
17	04	-	17	16	-
19	22	22	18	04	00
20	02	-	18	05	-
20	-	-	19	14	53
20	17	-	20	07	-
21	19	09	21	16	14
23	13	-	21	18	20
25	03	54	22	02	-
26	19	06	22	07	-
29	14	-	25	00	43
30	07	57	26	18	-
Oct. 2	22	-			

POSITIONS OF OBSERVATORIES.

(North Latitudes and West Longitudes are Considered Positive.)

Place.	Latitude.	Reduction to Geocentric Latitude.	Log ρ .	Longitude.	
				From Washington.	From Greenwich.
	° ' "	' "		h m s	h m s
Abastuman	+ 41 42 24	- 11 35.5	9.999 351	- 7 59 41	- 2 51 25
Åbo	+ 60 26 56.8	- 10 02.1	9.998 887	- 6 37 22.20	- 1 29 06.42
Adelaide	- 34 55 38.5	+ 10 56.8	9.999 520	+ 9 37 23.92	- 9 14 20.30
Albany (<i>New Obs.</i>) . .	+ 42 39 12.7	- 11 38.0	9.999 326	- 0 13 09.0	+ 4 55 06.8
Albany (<i>Old Obs.</i>) . .	+ 42 39 49.5	- 11 38.0	9.999 326	- 0 13 15.79	+ 4 54 59.99
Alfred (<i>N. Y.</i>) . . .	+ 42 15 19.8	- 11 37.0	9.999 337	+ 0 02 51.37	+ 5 11 07.15
Algiers (<i>Old Obs.</i>) . .	+ 36 44 00	- 11 10.8	9.999 476	- 5 20 32.6	- 0 12 16.8
Algiers (<i>New Obs.</i>) . .	+ 36 47 50	- 11 11.3	9.999 474	- 5 20 24.33	- 0 12 08.55
Allegheny	+ 40 27 41.6	- 11 31.3	9.999 383	+ 0 11 47.15	+ 5 20 02.93
Altona	+ 53 32 45.3	- 11 10.2	9.999 049	- 5 48 02.02	- 0 39 46.24
Amherst	+ 42 22 17.1	- 11 37.3	9.999 334	- 0 18 11.11	+ 4 50 04.67
Annapolis	+ 38 58 53.5	- 11 24.5	9.999 420	- 0 02 19.29	+ 5 05 56.49
Ann Arbor	+ 42 16 48.0	- 11 37.0	9.999 336	+ 0 26 39.41	+ 5 34 55.19
Arequipa (<i>Harvard</i>) . .	- 16 24	+ 6 18.4	9.999 884	- 0 22 46	+ 4 45 30
Armagh	+ 54 21 12.7	- 11 04.2	9.999 029	- 4 41 40.4	+ 0 26 35.4
Athens	+ 37 58 20.7	- 11 18.9	9.999 445	- 6 43 08.70	- 1 34 52.92
Bamberg	+ 49 53 06.0	- 11 30.7	9.999 141	- 5 51 49.43	- 0 43 33.65
Beloit	+ 42 30 08.4	- 11 37.6	9.999 331	+ 0 47 51.5	+ 5 56 07.3
Bergen	+ 60 23 54	- 10 02.7	9.998 888	- 5 29 28.53	- 0 21 12.75
Berkeley	+ 37 52 23.6	- 11 18.3	9.999 448	+ 3 00 46.94	+ 8 09 02.72
Berlin	+ 52 30 16.7	- 11 17.1	9.999 075	- 6 01 50.63	- 0 53 34.85
Berlin (<i>Urania</i>) . . .	+ 52 31 30.7	- 11 17.0	9.999 075	- 6 01 43.23	- 0 53 27.45
Berne	+ 46 57 08.7	- 11 39.0	9.999 216	- 5 38 01.51	- 0 29 45.73
Besançon	+ 47 14 59.0	- 11 38.5	9.999 208	- 5 32 12.95	- 0 23 57.17
Bethlehem	+ 40 36 23.1	- 11 31.9	9.999 379	- 0 06 43.93	+ 5 01 31.85
Birr Castle	+ 53 05 47.0	- 11 13.3	9.999 060	- 4 36 34.9	+ 0 31 40.9
Bogota	+ 4 36 15.4	- 1 51.5	9.999 991	- 0 11 21.58	+ 4 56 54.20
Bologna	+ 44 29 54	- 11 40.3	9.999 279	- 5 53 40.7	- 0 45 24.9
Bombay	+ 18 53 45	- 7 08.1	9.999 847	- 9 59 31.52	- 4 51 15.74
Bonn	+ 50 43 45.0	- 11 26.9	9.999 120	- 5 36 39.00	- 0 28 23.22
Bordeaux	+ 44 50 07.2	- 11 40.4	9.999 271	- 5 06 10.24	+ 0 02 05.54
Boston (<i>University</i>) . .	+ 42 21 32.5	- 11 37.2	9.999 334	- 0 24 00.8	+ 4 44 15.0
Bothkamp	+ 54 12 09.6	- 11 05.3	9.999 033	- 5 48 47.0	- 0 40 31.2
Breslau	+ 51 06 55.8	- 11 25.0	9.999 110	- 6 16 24.57	- 1 08 08.79
Brisbane	- 27 28 00.0	+ 9 32.2	9.999 689	+ 8 39 37.82	- 10 12 06.40
Brussels (<i>Uccle</i>) . . .	+ 50 47 53	- 11 26.6	9.999 118	- 5 25 42.7	- 0 17 26.9
Brussels (<i>Old Obs.</i>) . .	+ 50 51 10.7	- 11 26.3	9.999 117	- 5 25 44.51	- 0 17 28.73
Budapest	+ 47 29 34.7	- 11 38.0	9.999 202	- 6 24 31.1	- 1 16 15.3
Cairo	+ 30 04 38.2	- 10 06.5	9.999 632	- 7 13 24.69	- 2 05 08.91
Cambridge (<i>England</i>) . .	+ 52 12 51.6	- 11 18.9	9.999 082	- 5 08 38.53	- 0 00 22.75
Cambridge (<i>Mass.</i>) . .	+ 42 22 47.6	- 11 37.3	9.999 334	- 0 23 44.73	+ 4 44 31.05
Cape of Good Hope . .	- 33 56 03.6	+ 10 48.0	9.999 543	- 6 22 10.54	- 1 13 54.76
Catania	+ 37 30 13.3	- 11 16.0	9.999 457	- 6 08 36	- 1 00 20
Chapultepec	+ 19 25 17.5	- 7 18.2	9.999 838	+ 1 28 22.52	+ 6 36 38.30
Charkow	+ 50 00 09.6	- 11 30.2	9.999 138	- 7 33 11.55	- 2 24 55.77

POSITIONS OF OBSERVATORIES.

(North Latitudes and West Longitudes are Considered Positive.)

Place.	Latitude.	Reduction to Geocentric Latitude.	Log ρ .	Longitude.	
				From Washington.	From Greenwich.
	° ' "	' "		h m s	h m s
Charlottesville	+ 38 02 01.2	- 11 19.3	9.999 444	+ 0 05 49.44	+ 5 14 05.22
Chicago (<i>Old Obs.</i>)	+ 41 50 01.0	- 11 35.9	9.999 348	+ 0 42 11.06	+ 5 50 26.84
Christiania	+ 59 54 44.0	- 10 08.7	9.998 899	- 5 51 09.30	- 0 42 53.52
Cincinnati (<i>New Obs.</i>)	+ 39 08 19.5	- 11 25.4	9.999 416	+ 0 29 25.62	+ 5 37 41.40
Cincinnati (<i>Old Obs.</i>)	+ 39 06 26.5	- 11 25.2	9.999 417	+ 0 29 43.22	+ 5 37 59.00
Clinton	+ 43 03 17.0	- 11 38.7	9.999 316	- 0 06 38.33	+ 5 01 37.45
Coimbra	+ 40 12 24.5	- 11 30.3	9.999 389	- 4 34 32.7	+ 0 33 43.1
Columbia (<i>Missouri</i>)	+ 38 56 51.7	- 11 24.4	9.999 421	+ 1 01 02.55	+ 6 09 18.33
Copenhagen	+ 55 41 12.9	- 10 53.1	9.998 997	- 5 58 34.48	- 0 50 18.70
Cordoba	- 31 25 15.2	+ 10 22.2	9.999 602	- 0 51 27.56	+ 4 16 48.22
Cracow	+ 50 03 52.0	- 11 29.9	9.999 137	- 6 28 06.06	- 1 19 50.28
Crowborough	+ 51 03 14	- 11 25.4	9.999 112	- 5 08 54	- 0 00 38
Dantzic	+ 54 21 18.0	- 11 04.1	9.999 029	- 6 22 55.4	- 1 14 39.6
Denver	+ 39 40 36.4	- 11 27.9	9.999 402	+ 1 51 31.85	+ 6 59 47.63
Dorpat	+ 58 22 47.1	- 10 26.4	9.998 934	- 6 55 09.07	- 1 46 53.29
Dresden	+ 51 02 16.8	- 11 25.4	9.999 112	- 6 03 10.63	- 0 54 54.85
Dublin	+ 53 23 13.1	- 11 11.3	9.999 053	- 4 42 54.7	+ 0 25 21.1
Dun Echt	+ 57 09 36	- 10 39.2	9.998 962	- 4 58 35.8	+ 0 09 40.0
Durham	+ 54 46 06.2	- 11 00.9	9.999 019	- 5 01 56.03	+ 0 06 19.75
Düsseldorf	+ 51 12 25.0	- 11 24.6	9.999 108	- 5 35 20.8	- 0 27 05.0
Edinburgh (<i>Calton Hill</i>)	+ 55 57 23.2	- 10 50.7	9.998 991	- 4 55 32.7	+ 0 12 43.1
Edinburgh (<i>Royal Obs.</i>)	+ 55 55 28.0	- 10 50.9	9.998 991	- 4 55 31.6	+ 0 12 44.2
Evanston (<i>Dearborn</i>)	+ 42 03 33.4	- 11 36.5	9.999 342	+ 0 42 26.5	+ 5 50 42.3
Florence (<i>Reale Museo</i>)	+ 43 46 04.1	- 11 39.7	9.999 298	- 5 53 17.3	- 0 45 01.5
Florence (<i>Arcturi</i>)	+ 43 45 14.6	- 11 39.7	9.999 298	- 5 53 17.12	- 0 45 01.34
Geneva	+ 46 11 58.8	- 11 39.9	9.999 236	- 5 32 52.49	- 0 24 36.71
Genoa	+ 44 25 09.3	- 11 40.2	9.999 281	- 5 43 57.11	- 0 35 41.33
Georgetown	+ 38 54 26.7	- 11 24.2	9.999 422	+ 0 00 02.48	+ 5 08 18.26
Glasgow (<i>Missouri</i>)	+ 39 13 45.6	- 11 25.8	9.999 414	+ 1 03 02.30	+ 6 11 18.08
Glasgow (<i>Scotland</i>)	+ 55 52 42.8	- 10 51.5	9.998 993	- 4 51 05.23	+ 0 17 10.55
Gohlis	+ 51 21 35.0	- 11 23.7	9.999 104	- 5 57 45.43	- 0 49 29.65
Gotha (<i>Old Obs.</i>)	+ 50 56 05.2	- 11 26.0	9.999 114	- 5 51 10.88	- 0 42 55.10
Gotha	+ 50 56 37.9	- 11 25.9	9.999 114	- 5 51 06.27	- 0 42 50.49
Göttingen	+ 51 31 47.9	- 11 22.8	9.999 100	- 5 48 02.07	- 0 39 46.29
Graz	+ 47 04 37.2	- 11 38.8	9.999 213	- 6 10 04	- 1 01 48
Greenwich	+ 51 28 38.1	- 11 23.1	9.999 101	- 5 08 15.78	0 00 00.00
Grignon	+ 47 33 42	- 11 37.8	9.999 201	- 5 25 54	- 0 17 38
Hamburg	+ 53 33 07.0	- 11 10.1	9.999 049	- 5 48 09.6	- 0 39 53.8
Hanover	+ 43 42 15.3	- 11 39.6	9.999 300	- 0 19 07.87	+ 4 49 07.91
Harrow	+ 51 34 47.1	- 11 22.6	9.999 098	- 5 06 55.92	+ 0 01 19.86
Hastings-on-Hudson	+ 40 59 25	- 11 33.2	9.999 369	- 0 12 46.33	+ 4 55 29.45
Haverford	+ 40 00 40.1	- 11 29.4	9.999 394	- 0 07 03.08	+ 5 01 12.70
Heidelberg	+ 49 24 35	- 11 32.5	9.999 153	- 5 43 04.3	- 0 34 48.5
Helsingfors	+ 60 09 42.6	- 10 05.6	9.998 893	- 6 48 04.93	- 1 39 49.15
Hereny	+ 47 15 47.4	- 11 38.4	9.999 208	- 6 14 40.5	- 1 06 24.7

POSITIONS OF OBSERVATORIES.

(North Latitudes and West Longitudes are Considered Positive.)

Place.	Latitude.	Reduction to Geocentric Latitude.	'Log p.	Longitude.	
				From Washington.	From Greenwich
	° ' "	° ' "		h m s	h m s
Hongkong	+ 22 18 13.4	- 8 10.7	9.999 789	+ 11 15 02.36	- 7 36 41.86
Hudson	+ 41 14 42.6	- 11 34.1	9.999 363	+ 0 17 25.5	+ 5 25 41.3
Jamaica	+ 18 24 51	- 6 58.7	9.999 854	+ 0 03 13.70	+ 5 11 29.48
Jena (<i>University</i>)	+ 50 55 34.9	- 11 26.0	9.999 115	- 5 54 36.05	- 0 46 20.27
Kalocsa	+ 46 31 41.7	- 11 39.6	9.999 227	- 6 24 10.12	- 1 15 54.34
Karlsruhe	+ 49 00 29.6	- 11 33.9	9.999 163	- 5 41 52.2	- 0 33 36.4
Kasan	+ 55 47 24.4	- 10 52.2	9.998 995	- 8 24 44.82	- 3 16 29.04
Kew	+ 51 28 06	- 11 23.2	9.999 101	- 5 07 00.7	+ 0 01 15.1
Kiel	+ 54 20 28.5	- 11 04.2	9.999 030	- 5 48 51.42	- 0 40 35.64
Kiew	+ 50 27 10.5	- 11 28.2	9.999 127	- 7 10 16.42	- 2 02 00.64
Kis Kartal	+ 47 41 54.8	- 11 37.5	9.999 197	- 6 26 27.5	- 1 18 11.7
Königsberg	+ 54 42 50.4	- 11 01.3	9.999 021	- 6 30 14.82	- 1 21 59.04
Kremsmünster	+ 48 03 23.1	- 11 36.7	9.999 188	- 6 04 47.37	- 0 56 31.59
La Plata	- 34 54 30.3	+ 10 56.7	9.999 520	- 1 16 38.8	+ 3 51 37.0
Leiden	+ 52 09 20.0	- 11 19.3	9.999 084	- 5 26 11.95	- 0 17 56.17
Leipzig	+ 51 20 05.9	- 11 23.9	9.999 104	- 5 57 49.76	- 0 49 33.98
Liege (<i>Cointe, Ougrée</i>)	+ 50 37 07	- 11 27.5	9.999 123	- 5 30 31.0	- 0 22 15.2
Lisbon (<i>Marine Obs.</i>)	+ 38 42 17.6	- 11 23.3	9.999 427	- 4 31 42.20	+ 0 36 33.58
Lisbon (<i>Royal Obs.</i>)	+ 38 42 31.3	- 11 23.1	9.999 427	- 4 31 31.10	+ 0 36 44.68
Liverpool	+ 53 24 04.8	- 11 11.2	9.999 053	- 4 55 58.45	+ 0 12 17.33
Lübec	+ 53 51 31.1	- 11 07.9	9.999 042	- 5 51 01.5	- 0 42 45.7
Lund	+ 55 41 51.6	- 10 53.0	9.998 997	- 6 01 00.79	- 0 52 45.01
Lussinpiccolo (<i>Manora</i>)	+ 44 32 11.0	- 11 40.3	9.999 278	- 6 06 08.19	- 0 57 52.41
Lyons	+ 45 41 41.0	- 11 40.3	9.999 248	- 5 27 24.33	- 0 19 08.55
Madison	+ 43 04 36.8	- 11 38.7	9.999 316	+ 0 49 22.15	+ 5 57 37.93
Madras	+ 13 04 08.0	- 5 07.6	9.999 925	- 10 29 14.90	- 5 20 59.12
Madrid	+ 40 24 29.7	- 11 31.1	9.999 384	- 4 53 30.66	+ 0 14 45.12
Manila	+ 14 35 25	- 5 40.5	9.999 907	+ 10 47 54	- 8 03 50
Mannheim	+ 49 29 11.0	- 11 32.2	9.999 151	- 5 42 06.23	- 0 33 50.45
Marburg	+ 50 48 46.9	- 11 26.5	9.999 118	- 5 43 20.7	- 0 35 04.9
Markree	+ 54 10 31.8	- 11 05.5	9.999 034	- 4 34 27.4	+ 0 33 48.4
Marseilles	+ 43 18 17.5	- 11 39.1	9.999 310	- 5 29 50.37	- 0 21 34.59
Mauritius	- 20 05 39	+ 7 30.8	9.999 828	- 8 58 28.4	- 3 50 12.6
Melbourne	- 37 49 53.4	+ 11 18.1	9.999 449	+ 9 11 50.2	- 9 39 54.0
Meudon	+ 48 48 18	- 11 34.6	9.999 169	- 5 17 11.4	- 0 08 55.6
Mexico	+ 19 26 01.3	- 7 18.4	9.999 838	+ 1 28 10.95	+ 6 36 26.73
Middletown (<i>Conn.</i>)	+ 41 33 16.0	- 11 35.1	9.999 355	- 0 17 38.60	+ 4 50 37.18
Milan	+ 45 27 59.3	- 11 40.4	9.999 254	- 5 45 01.70	- 0 36 45.92
Modena	+ 44 38 52.8	- 11 40.4	9.999 275	- 5 51 58.7	- 0 43 42.9
Moncalieri	+ 44 59 51	- 11 40.4	9.999 266	- 5 39 05	- 0 30 49
Montreal	+ 45 30 17.0	- 11 40.4	9.999 253	- 0 13 57.15	+ 4 54 18.63
Montsouris	+ 48 49 18.0	- 11 34.5	9.999 168	- 5 17 36.46	- 0 09 20.68
Moscow	+ 55 45 19.8	- 10 52.5	9.998 995	- 7 38 32.87	- 2 30 17.09
Mount Hamilton (<i>Lick</i>)	+ 37 20 25.6	- 11 14.9	9.999 461	+ 2 58 19.11	+ 8 06 34.89
Munich	+ 48 08 45.5	- 11 36.5	9.999 186	- 5 54 41.85	- 0 46 26.07

POSITIONS OF OBSERVATORIES.

(North Latitudes and West Longitudes are Considered Positive.)

Place.	Latitude.	Reduction to Geocentric Latitude.	Log ρ .	Longitude.	
				From Washington.	From Greenwich.
				h m s	h m s
Naples	+ 40 51 46.3	- 11 32.8	9.999 372	- 6 05 17.51	- 0 57 01.73
Nashville	+ 36 08 54.4	- 11 06.6	9.999 490	+ 0 38 56.4	+ 5 47 12.2
Natal	- 29 50 46.6	+ 10 03.7	9.999 637	- 7 12 16.96	- 2 04 01.18
Neuchatel	+ 47 00 01.2	- 11 38.9	9.999 215	- 5 36 05.71	- 0 27 49.93
New Haven (<i>Old Obs.</i>)	+ 41 18 36.5	- 11 34.3	9.999 361	- 0 16 33.64	+ 4 51 42.14
New Haven (<i>Yale Univ.</i>)	+ 41 19 22.3	- 11 34.4	9.999 361	- 0 16 35.20	+ 4 51 40.58
New York (<i>Columb. Coll.</i>)	+ 40 45 23.1	- 11 32.4	9.999 375	- 0 12 22.14	+ 4 55 53.64
New York (<i>RUTHERFURD</i>)	+ 40 43 48.5	- 11 32.3	9.999 376	- 0 12 19.10	+ 4 55 56.68
Nice	+ 43 43 16.9	- 11 39.6	9.999 299	- 5 37 27.96	- 0 29 12.18
Nicolaëff	+ 46 58 21.8	- 11 38.9	9.999 216	- 7 16 09.58	- 2 07 53.80
Northfield	+ 44 27 41.6	- 11 40.3	9.999 280	+ 1 04 20.03	+ 6 12 35.81
Oakland (<i>Cal.</i>)	+ 37 48 05	- 11 17.9	9.999 449	+ 3 00 50.77	+ 8 09 06.55
Odessa	+ 46 28 36.7	- 11 39.6	9.999 228	- 7 11 17.88	- 2 03 02.10
Ogden	+ 41 13 08.6	- 11 34.0	9.999 363	+ 2 19 43.85	+ 7 27 59.63
O-Gyalla	+ 47 52 27.3	- 11 37.1	9.999 192	- 6 21 01.32	- 1 12 45.54
Olmütz	+ 49 35 43	- 11 31.8	9.999 149	- 6 17 24	- 1 09 08
Oxford (<i>Mississippi</i>)	+ 34 22 12.6	- 10 52.0	9.999 533	+ 0 49 51.3	+ 5 58 07.1
Oxford (<i>Radcliffe</i>)	+ 51 45 35.4	- 11 21.6	9.999 094	- 5 03 13.2	+ 0 05 02.6
Oxford (<i>University</i>)	+ 51 45 34.2	- 11 21.6	9.999 094	- 5 03 15.4	+ 0 05 00.4
Padua	+ 45 24 05	- 11 40.4	9.999 256	- 5 55 44.97	- 0 47 29.19
Palermo	+ 38 06 44.0	- 11 19.7	9.999 442	- 6 01 41.68	- 0 53 25.90
Paramatta	- 33 48 49.8	+ 10 46.9	9.999 546	+ 8 47 44.0	- 10 04 00.2
Paris	+ 48 50 11.2	- 11 34.5	9.999 168	- 5 17 36.75	- 0 09 20.97
Philadelphia	+ 39 57 07.5	- 11 29.2	9.999 396	- 0 07 37.27	+ 5 00 38.51
Plonsk	+ 52 37 40.0	- 11 16.4	9.999 072	- 6 29 47.8	- 1 21 32.0
Pola	+ 44 51 48.7	- 11 40.4	9.999 270	- 6 03 38.67	- 0 55 22.89
Portsmouth	+ 50 48 03	- 11 26.6	9.999 118	- 5 03 51.0	+ 0 04 24.8
Potsdam	+ 52 22 56.0	- 11 17.9	9.999 078	- 6 00 31.7	- 0 52 15.9
Poughkeepsie	+ 41 41 18	- 11 35.5	9.999 351	- 0 12 42.13	+ 4 55 33.65
Prague (<i>University</i>)	+ 50 05 15.8	- 11 29.8	9.999 136	- 6 05 56.1	- 0 57 40.3
Princeton	+ 40 20 57.8	- 11 30.8	9.999 385	- 0 09 38.17	+ 4 58 37.61
Princeton (<i>Halsted</i>)	+ 40 20 55.8	- 11 30.9	9.999 386	- 0 09 36.34	+ 4 58 39.44
Providence (<i>SEAGRAVE</i>)	+ 41 49 46.4	- 11 35.9	9.999 348	- 0 22 38.14	+ 4 45 37.64
Providence (<i>Ladd</i>)	+ 41 50 21	- 11 35.9	9.999 348	- 0 22 39.83	+ 4 45 35.95
Pulkowa	+ 59 46 18.7	- 10 10.4	9.998 902	- 7 09 34.42	- 2 01 18.64
Quebec	+ 46 47 59.2	- 11 39.2	9.999 220	- 0 23 23.14	+ 4 44 52.64
Quito	- 0 14 00	+ 0 05.7	0.000 000	+ 0 05 50.88	+ 5 14 06.66
Riga	+ 56 57 09.3	- 10 41.3	9.998 967	- 6 44 43.95	- 1 36 28.17
Rio de Janeiro	- 22 54 23.6	+ 8 21.1	9.999 779	- 2 15 34.4	+ 2 52 41.4
Rochester	+ 43 09 16.8	- 11 38.8	9.999 314	+ 0 02 06.00	+ 5 10 21.78
Rome (<i>Coll. Rom.</i>)	+ 41 53 53.6	- 11 36.1	9.999 346	- 5 58 11.33	- 0 49 55.55
Rome (<i>Capitol</i>)	+ 41 53 33.5	- 11 36.0	9.999 346	- 5 58 12.15	- 0 49 56.37
Rome (<i>Vatican</i>)	+ 41 54 04.8	- 11 36.1	9.999 346	- 5 58 05.25	- 0 49 49.47
Rousdon	+ 50 42 38	- 11 27.0	9.999 120	- 4 56 16.84	+ 0 11 58.94
Rugby	+ 52 22 07	- 11 18.0	9.999 079	- 5 03 13.8	+ 0 05 02.0

POSITIONS OF OBSERVATORIES.

(North Latitudes and West Longitudes are Considered Positive.)

Place.	Latitude.	Reduction to Geocentric Latitude.	Log ρ .	Longitude.	
				From Washington.	From Greenwich.
	° ' "	"		h m s	h m s
San Fernando . . .	+ 36 27 42.0	- 11 08.9	9.999 483	- 4 43 26.6	+ 0 24 49.2
San Francisco . . .	+ 37 47 27.9	- 11 17.8	9.999 450	+ 3 01 27.08	+ 8 09 42.86
Santiago de Chile . . .	- 33 26 42.0	+ 10 43.4	9.999 555	- 0 25 29.56	+ 4 42 46.22
South Hadley . . .	+ 42 15 18.2	- 11 37.0	9.999 337	- 0 17 55.49	+ 4 50 20.29
Speier . . .	+ 49 18 55.2	- 11 32.9	9.999 156	- 5 42 01.34	- 0 33 45.56
St. Louis . . .	+ 38 38 03.0	- 11 22.7	9.999 429	+ 0 52 33.48	+ 6 00 49.26
St. Petersburg (<i>Academy</i>) . . .	+ 59 56 29.7	- 10 08.4	9.998 898	- 7 09 29.24	- 2 01 13.46
St. Petersburg (<i>Univ.</i>) . . .	+ 59 56 32.0	- 10 08.4	9.998 898	- 7 09 27.2	- 2 01 11.4
Stockholm . . .	+ 59 20 33.0	- 10 15.5	9.998 912	- 6 20 29.77	- 1 12 13.99
Stonyhurst . . .	+ 53 50 40	- 11 08.0	9.999 042	- 4 58 23.10	+ 0 09 52.68
Strassburg (<i>New Obs.</i>) . . .	+ 48 35 00.3	- 11 35.3	9.999 174	- 5 39 20.47	- 0 31 04.69
Strassburg (<i>Old Obs.</i>) . . .	+ 48 34 53.8	- 11 35.3	9.999 174	- 5 39 18.27	- 0 31 02.49
Sydney . . .	- 33 51 41.1	+ 10 47.3	9.999 545	+ 8 46 54.68	- 10 04 49.54
Syracuse . . .	+ 43 02 13.1	- 11 38.6	9.999 317	- 0 03 42.42	+ 5 04 33.36
Tacubaya . . .	+ 19 24 17.5	- 7 17.8	9.999 839	+ 1 28 30.75	+ 6 36 46.53
Taschkent . . .	+ 41 19 31.3	- 11 34.4	9.999 361	- 9 45 26.58	- 4 37 10.80
Tokio . . .	+ 35 39 17.5	- 11 02.8	9.999 502	+ 9 32 46.20	- 9 18 58.02
Toronto . . .	+ 43 39 35.9	- 11 39.6	9.999 301	+ 0 09 18.87	+ 5 17 34.65
Toulouse . . .	+ 43 36 45	- 11 39.5	9.999 302	- 5 14 05.66	- 0 05 49.88
Trieste . . .	+ 45 38 45.4	- 11 40.3	9.999 250	- 6 03 18.73	- 0 55 02.95
Troy (<i>N. Y.</i>) . . .	+ 42 43 52.9	- 11 38.1	9.999 325	- 0 13 33.49	+ 4 54 42.29
Tulse Hill . . .	+ 51 26 47.0	- 11 23.3	9.999 102	- 5 07 48.1	+ 0 00 27.7
Turin . . .	+ 45 04 08.0	- 11 40.4	9.999 265	- 5 39 02.96	- 0 30 47.18
Tuscaloosa (<i>Ala. Univ.</i>) . . .	+ 33 12 36.8	- 10 41.1	9.999 561	+ 0 41 55.96	+ 5 50 11.74
Twickenham . . .	+ 51 27 04.2	- 11 23.3	9.999 102	- 5 07 02.7	+ 0 01 13.1
Upsala (<i>New Obs.</i>) . . .	+ 59 51 29.4	- 10 09.3	9.998 900	- 6 18 45.93	- 1 10 30.15
Utrecht . . .	+ 52 05 09.6	- 11 19.7	9.999 086	- 5 28 46.8	- 0 20 31.0
Venice . . .	+ 45 26 10.5	- 11 40.4	9.999 255	- 5 57 37.90	- 0 49 22.12
Vienna (<i>Josephstadt</i>) . . .	+ 48 12 53.8	- 11 36.2	9.999 183	- 6 13 41.1	- 1 05 25.3
Vienna (<i>New Obs.</i>) . . .	+ 48 13 55.4	- 11 36.2	9.999 183	- 6 13 37.17	- 1 05 21.39
Vienna (<i>Old Obs.</i>) . . .	+ 48 12 35.5	- 11 36.3	9.999 184	- 6 13 47.42	- 1 05 31.64
Vienna (<i>Ottakring</i>) . . .	+ 48 12 46.7	- 11 36.2	9.999 183	- 6 13 26.89	- 1 05 11.11
Warsaw . . .	+ 52 13 04.7	- 11 18.9	9.999 082	- 6 32 23.06	- 1 24 07.28
Washington . . .	+ 38 55 14.0	- 11 24.2	9.999 422	0 00 00.00	+ 5 08 15.78
Washington (<i>Old Obs.</i>) . . .	+ 38 53 38.8	- 11 24.1	9.999 422	- 0 00 03.63	+ 5 08 12.15
Washington (<i>Smithsonian</i>) . . .	+ 38 53 17.3	- 11 24.1	9.999 422	- 0 00 09.6	+ 5 08 06.2
Washington (<i>Cath. Univ.</i>) . . .	+ 38 56 14.8	- 11 24.2	9.999 422	- 0 00 15.78	+ 5 08 00.00
Wellington . . .	- 41 18 00.6	+ 11 34.3	9.999 361	+ 7 12 37.70	- 11 39 06.52
West Point (<i>Old Obs.</i>) . . .	+ 41 23 31	- 11 34.6	9.999 359	- 0 12 26.34	+ 4 55 49.44
West Point (<i>New Obs.</i>) . . .	+ 41 23 22.1	- 11 34.6	9.999 359	- 0 12 25.23	+ 4 55 50.55
Wilhelmshaven . . .	+ 53 31 52.2	- 11 10.3	9.999 050	- 5 40 50.89	- 0 32 35.11
Williamstown (<i>Mass.</i>) . . .	+ 42 42 30	- 11 38.0	9.999 325	- 0 15 26	+ 4 52 50
Williamstown (<i>Victoria</i>) . . .	- 37 52 07.2	+ 11 18.3	9.999 448	+ 9 12 06.1	- 9 39 38.1
Wilna . . .	+ 54 40 59.1	- 11 01.6	9.999 021	- 6 49 24.60	- 1 41 08.82
Windsor . . .	- 33 36 30.8	+ 10 44.9	9.999 551	+ 8 48 23.7	- 10 03 20.5
Zürich . . .	+ 47 22 40.0	- 11 38.2	9.999 205	- 5 42 28.08	- 0 34 12.30

PART IV.

APPARENT PLACES OF STARS, STAR NUMBERS,
AND OTHER DATA,

BASED ON THE CONSTANTS OF THE
PARIS CONFERENCE OF 1896.

FORMULÆ FOR THE REDUCTION OF THE POSITIONS OF THE FIXED STARS, USING THE NOTATION OF BESSEL, AND THE CONSTANTS OF THE PARIS CONFERENCE, OF MAY, 1896.

NOTATION.

τ , the time reckoned in units of one year, from the beginning of the Besselian fictitious year, (1902, December 31.826^d = 1903, January 0.826^d, Washington mean time),
 α_0, δ_0 , the star's mean right ascension and declination at the beginning of the fictitious year,
 a, δ , the star's apparent right ascension and declination at the time τ ,
 μ, μ' , the annual proper motion in right ascension and declination,
 \odot , the Sun's true longitude,
 L , the Sun's mean longitude,
 Ω , the longitude of the Moon's ascending node, | ω , the obliquity of the ecliptic,
 Γ' , the longitude of the Moon's perigee,
 ζ , the Moon's mean longitude.

BESSELIAN STAR-NUMBERS.

$$\begin{aligned} A &= \tau - 0.34216 \sin \Omega & + 0.00024 \sin (\zeta + \Gamma') \\ &+ 0.00415 \sin 2\Omega & + 0.00133 \sin (\zeta - \Gamma') \\ &- 0.02495 \sin 2L & - 0.00068 \sin (2\zeta - \Omega) \\ &+ 0.00218 \sin (L + 75.3^\circ) & - 0.00052 \sin (3\zeta - \Gamma') \\ &- 0.00097 \sin (3L + 78.7^\circ) & + 0.00030 \sin (\zeta - 2L + \Gamma') \\ &+ 0.00024 \sin (2L - \Omega) & + 0.00012 \sin 2(\zeta - L) \\ &- 0.00405 \sin 2\zeta & \\ B &= -9.210 \cos \Omega & + 0.007 \cos (2L - \Omega) \\ &+ 0.090 \cos 2\Omega & - 0.088 \cos 2\zeta \\ &- 0.546 \cos 2L & - 0.018 \cos (2\zeta - \Omega) \\ &- 0.021 \cos (3L + 78.7^\circ) & - 0.011 \cos (3\zeta - \Gamma') \\ &+ 0.009 \cos (L - 78.7^\circ) & + 0.005 \cos (\zeta + \Gamma') \\ C &= -20.4700 \cos \omega \cos \odot \\ D &= -20.4700 \sin \odot \\ E &= -0.0425 \sin \Omega + 0.0005'' \sin 2\Omega - 0.0031'' \sin 2L \end{aligned}$$

BESSEL'S Star-Constants.

$$\begin{aligned} a &= 3.07240'' + 1.33644'' \sin a_0 \tan \delta_0 = \text{precession in right ascension} \\ b &= \frac{1}{18} \cos a_0 \tan \delta_0 \\ c &= \frac{1}{18} \cos a_0 \sec \delta_0 \\ d &= \frac{1}{18} \sin a_0 \sec \delta_0 \\ a' &= 20.0465'' \cos a_0 = \text{precession in declination} \\ b' &= -\sin a_0 \\ c' &= \tan \omega \cos \delta_0 - \sin a_0 \sin \delta_0 \\ d' &= \cos a_0 \sin \delta_0 \end{aligned}$$

Reduction to Apparent Position.

$$\begin{aligned} a &= a_0 + \tau \mu + Aa + Bb + Cc + Dd + \frac{1}{18} E & (\text{in time}) \\ \delta &= \delta_0 + \tau \mu' + Aa' + Bb' + Cc' + Dd' & (\text{in arc}) \end{aligned}$$

INDEPENDENT STAR-NUMBERS.

$$\begin{aligned} f &= f' + f'' = +46.0858'' A + E \text{ (in arc)} = 3.07240'' A + \frac{1}{18} E & (\text{in time}) \\ f' &= -0.0124'' \sin 2\zeta + 0.0041'' \sin (\zeta - \Gamma') + 0.0007'' \sin (\zeta + \Gamma') \\ &- 0.0021'' \sin (2\zeta - \Omega) - 0.0016'' \sin (3\zeta - \Gamma') \\ &+ 0.0009'' \sin (\zeta - 2L + \Gamma') + 0.0004'' \sin 2(\zeta - L) \\ g \sin G &= B & h \sin H &= C \\ g \cos G &= 20.0465'' A & h \cos H &= D & i &= C \tan \omega \end{aligned}$$

Reduction to Apparent Position.

$$\begin{aligned} a &= a_0 + f + \tau \mu + \frac{1}{18} g \sin (G + a_0) \tan \delta_0 + \frac{1}{18} h \sin (H + a_0) \sec \delta_0 & (\text{in time}) \\ \delta &= \delta_0 + \tau \mu' + g \cos (G + a_0) + h \cos (H + a_0) \sin \delta_0 + i \cos \delta_0 & (\text{in arc}) \end{aligned}$$

NOTES.—(1) The independent star-numbers are more convenient, when only one or two apparent positions of a star are required, or when BESSEL'S star-constants are not known with sufficient accuracy. Otherwise, the Besselian star-numbers are more convenient.

(2) In using the star-constants of the *British Association Catalogue*, $a, b, c, d, a', b', c', d'$, with the star-numbers of this Ephemeris, the quantities to be formed are $Ac, Bd, Ca, Db, -Ac', -Bd', -Ca', -Db'$.

(CONSTANTS OF PARIS CONFERENCE.)

FOR GREENWICH MEAN NOON.

Date.	Precession in Longitude from 1903.0.	Nutation.			Obliquity of Ecliptic. (<i>Newcomb</i> .)	The Sun's Aberration.
		In Longitude.	In R. A.	In Obliquity.		
Jan. 0	— 0.14	+ 6.77	+ 0.414	— 9.20	23 26 57.66	— 20.81
10	+ 1.23	7.03	0.430	9.13	57.72	20.81
20	2.61	7.19	0.440	9.02	57.82	20.80
30	3.98	7.23	0.442	8.86	57.96	20.77
Feb. 9	5.36	7.10	0.434	8.70	58.11	20.74
19	+ 6.74	+ 6.81	+ 0.417	— 8.55	23 26 58.25	— 20.70
Mar. 1	8.11	6.39	0.391	8.42	58.36	20.65
11	9.49	5.87	0.359	8.34	58.43	20.59
21	10.86	5.29	0.324	8.34	58.42	20.54
31	12.24	4.71	0.288	8.40	58.35	20.48
Apr. 10	+ 13.62	+ 4.18	+ 0.256	— 8.51	23 26 58.22	— 20.42
20	14.99	3.74	0.229	8.67	58.05	20.36
30	16.37	3.42	0.209	8.87	57.84	20.31
May 10	17.74	3.23	0.197	9.07	57.62	20.26
20	19.12	3.18	0.194	9.27	57.41	20.22
30	+ 20.50	+ 3.25	+ 0.199	— 9.43	23 26 57.24	— 20.18
June 9	21.87	3.41	0.208	9.55	57.10	20.15
19	23.25	3.63	0.222	9.62	57.02	20.14
29	24.62	3.86	0.236	9.63	57.00	20.13
July 9	26.00	4.06	0.248	9.57	57.05	20.13
19	+ 27.38	+ 4.18	+ 0.256	— 9.47	23 26 57.13	— 20.14
29	28.75	4.20	0.257	9.34	57.25	20.16
Aug. 8	30.13	4.09	0.250	9.17	57.40	20.18
18	31.50	3.84	0.235	9.01	57.55	20.22
28	32.88	3.47	0.212	8.86	57.69	20.26
Sept. 7	+ 34.26	+ 2.99	+ 0.183	— 8.75	23 26 57.79	— 20.31
17	35.63	2.43	0.149	8.69	57.84	20.36
27	37.01	1.84	0.113	8.69	57.82	20.42
Oct. 7	38.38	1.26	0.077	8.75	57.75	20.48
17	39.76	0.75	0.046	8.87	57.62	20.54
27	+ 41.14	+ 0.35	+ 0.021	— 9.04	23 26 57.44	— 20.60
Nov. 6	42.51	+ 0.09	+ 0.006	9.23	57.23	20.65
16	43.89	— 0.02	— 0.001	9.44	57.01	20.70
26	45.26	+ 0.04	+ 0.002	9.62	56.82	20.74
Dec. 6	46.64	0.22	0.013	9.76	56.67	20.77
16	+ 48.02	+ 0.49	+ 0.030	— 9.83	23 26 56.58	— 20.80
26	49.39	0.80	0.049	9.85	56.55	20.81
36	+ 50.77	+ 1.09	+ 0.067	— 9.80	23 26 56.58	— 20.81

Mean Obliquity 1903.0 23° 27' 06.86" (*Newcomb*).

Precession for 1903 50.2571 log = 1.70120

Precession in a Solar Day 0.1376 log = 9.13861

Precession in a Sidereal Day 0.1372 log = 9.13742

FOR WASHINGTON MEAN MIDNIGHT.

Solar Day. (Sid. Hour.)	Log A.	Log B.	Log C.	Log D.	Solar Day. (Sid. Hour.)	Log A.	Log B.	Log C.	Log D.
Jan. 0	+9.13402	+0.9641	-0.49706	+1.30496	Feb. 15	+9.41824	+0.9310	-1.19413	+1.05451
1	9.14423	0.9626	0.54031	1.30358	16	9.42035	0.9317	1.19912	1.04279
2	9.15253	0.9611	0.57953	1.30205	17	9.42346	0.9326	1.20392	1.03060
3	9.15906	0.9598	0.61537	1.30038	h 18	9.42739	0.9333	1.20853	1.01794
4	9.16432	0.9590	0.64834	1.29857	(10.0) 19	9.43185	0.9335	1.21296	1.00475
h (7.0) 5	+9.16910	+0.9588	-0.67885	+1.29661	20	+9.43656	+0.9333	-1.21721	+0.99102
6	9.17455	0.9594	0.70723	1.29451	21	9.44119	0.9325	1.22129	0.97671
7	9.18167	0.9605	0.73373	1.29226	22	9.44560	0.9313	1.22519	0.96178
8	9.19109	0.9618	0.75858	1.28985	23	9.44945	0.9296	1.22892	0.94619
9	9.20282	0.9630	0.78195	1.28730	24	9.45268	0.9277	1.23249	0.92988
10	+9.21624	+0.9637	-0.80399	+1.28460	25	+9.45513	+0.9257	-1.23589	+0.91280
11	9.23019	0.9634	0.82483	1.28174	26	9.45673	0.9238	1.23914	0.89490
12	9.24343	0.9622	0.84458	1.27872	27	9.45758	0.9223	1.24222	0.87609
13	9.25486	0.9601	0.86334	1.27554	28	9.45797	0.9213	1.24515	0.85631
14	9.26383	0.9578	0.88120	1.27220	Mar. 1	9.45828	0.9212	1.24792	0.83545
15	+9.27040	+0.9555	-0.89821	+1.26870	2	+9.45903	+0.9219	-1.25055	+0.81341
16	9.27499	0.9537	0.91445	1.26503	3	9.46076	0.9231	1.25302	0.79006
17	9.27841	0.9527	0.92997	1.26120	4	9.46374	0.9246	1.25535	0.76526
18	9.28169	0.9525	0.94482	1.25719	h 5	9.46795	0.9258	1.25753	0.73883
19	9.28562	0.9530	0.95904	1.25300	(11.0) 6	9.47306	0.9263	1.25957	0.71057
h (8.0) 20	+9.29068	+0.9538	-0.97268	+1.24864	7	+9.47845	+0.9258	-1.26146	+0.68021
21	9.29697	0.9546	0.98577	1.24409	8	9.48340	0.9244	1.26321	0.64745
22	9.30425	0.9551	0.99834	1.23936	9	9.48742	0.9224	1.26483	0.61190
23	9.31207	0.9552	1.01043	1.23444	10	9.49011	0.9201	1.26630	0.57305
24	9.32002	0.9547	1.02205	1.22933	11	9.49154	0.9182	1.26764	0.53027
25	+9.32771	+0.9538	-1.03323	+1.22401	12	+9.49203	+0.9170	-1.26884	+0.48269
26	9.33490	0.9523	1.04400	1.21849	13	9.49213	0.9167	1.26991	0.42913
27	9.34136	0.9505	1.05437	1.21277	14	9.49241	0.9174	1.27084	0.36790
28	9.34680	0.9484	1.06436	1.20683	15	9.49326	0.9187	1.27164	0.29649
29	9.35110	0.9463	1.07399	1.20067	16	9.49496	0.9203	1.27231	0.21087
30	+9.35430	+0.9443	-1.08328	+1.19429	17	+9.49748	+0.9218	-1.27284	+0.10401
31	9.35660	0.9427	1.09223	1.18767	18	9.50062	0.9230	1.27325	0.96187
Feb. 1	9.35839	0.9417	1.10087	1.18082	19	9.50405	0.9237	1.27352	0.74911
2	9.36031	0.9415	1.10921	1.17372	h 20	9.50756	0.9239	1.27366	+0.31477
3	9.36303	0.9420	1.11725	1.16637	(12.0) 21	9.51088	0.9236	1.27367	-0.17087
h (9.0) 4	+9.36708	+0.9429	-1.12500	+1.15875	22	+9.51388	+0.9229	-1.27355	-0.70125
5	9.37276	0.9439	1.13249	1.15087	23	9.51634	0.9218	1.27330	0.93285
6	9.37987	0.9443	1.13971	1.14270	24	9.51822	0.9207	1.27292	0.08293
7	9.38778	0.9440	1.14667	1.13424	25	9.51951	0.9196	1.27241	0.19410
8	9.39566	0.9428	1.15339	1.12548	26	9.52016	0.9187	1.27177	0.28239
9	+9.40269	+0.9407	-1.15987	+1.11640	27	+9.52037	+0.9185	-1.27100	-0.35558
10	9.40824	0.9380	1.16612	1.10700	28	9.52042	0.9189	1.27010	0.41805
11	9.41209	0.9353	1.17215	1.09725	29	9.52076	0.9202	1.26907	0.47251
12	9.41442	0.9330	1.17796	1.08715	30	9.52179	0.9222	1.26791	0.52075
13	9.41582	0.9315	1.18355	1.07667	31	9.52388	0.9245	1.26661	0.56403
14	+9.41691	+0.9308	-1.18894	+1.06580	Apr. 1	+9.52711	+0.9267	-1.26518	-0.60324
15	+9.41824	+0.9310	-1.19413	+1.05451	2	+9.53126	+0.9284	-1.26362	-0.63906

$$E = +0.02 = +0.001^{\circ}$$

BESSELIAN STAR-NUMBERS, 1903.

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(CONSTANTS OF PARIS CONFERENCE.)

FOR WASHINGTON MEAN MIDNIGHT.

Solar Day. (Sid. Hour.)	Log A	Log B.	Log C.	Log D.	Solar Day. (Sid. Hour.)	Log A.	Log B.	Log C	Log D.
Apr. 1	+9.52711	+0.9267	-1.26518	-0.60324	May 17	+9.64308	+0.9650	-1.02021	-1.23016
2	9.53126	0.9284	1.26362	0.63906	18	9.64540	0.9647	1.00915	1.23498
3	9.53590	0.9292	1.26193	0.67201	19	9.64727	0.9644	0.99768	1.23962
4	9.54038	0.9291	1.26010	0.70249	h 20	9.64877	0.9644	0.98578	1.24409
(13.0) 5	9.54418	0.9281	1.25814	0.73084	(16.0) 21	9.65004	0.9649	0.97342	1.24839
6	+9.54691	+0.9268	-1.25604	-0.75731	22	+9.65132	+0.9661	-0.96058	-1.25253
7	9.54851	0.9256	1.25380	0.78212	23	9.65295	0.9679	0.94723	1.25650
8	9.54922	0.9250	1.25142	0.80546	24	9.65524	0.9702	0.93333	1.26032
9	9.54946	0.9253	1.24891	0.82747	25	9.65836	0.9726	0.91885	1.26398
10	9.54973	0.9265	1.24625	0.84829	26	9.66229	0.9748	0.90374	1.26749
11	+9.55046	+0.9285	-1.24345	-0.86802	27	+9.66684	+0.9764	-0.88797	-1.27085
12	9.55194	0.9308	1.24051	0.88676	28	9.67158	0.9771	0.87149	1.27406
13	9.55423	0.9332	1.23742	0.90460	29	9.67608	0.9769	0.85424	1.27712
14	9.55718	0.9354	1.23418	0.92160	30	9.67993	0.9760	0.83615	1.28004
15	9.56054	0.9370	1.23079	0.93783	31	9.68291	0.9749	0.81716	1.28282
16	+9.56401	+0.9381	-1.22725	-0.95334	June 1	+9.68507	+0.9740	-0.79718	-1.28546
17	9.56741	0.9387	1.22356	0.96819	2	9.68657	0.9736	0.77612	1.28797
18	9.57055	0.9388	1.21970	0.98242	3	9.68779	0.9741	0.75386	1.29034
h 19	9.57327	0.9386	1.21569	0.99607	h 4	9.68915	0.9753	0.73028	1.29257
(14.0) 20	9.57558	0.9382	1.21151	1.00918	(17.0) 5	9.69091	0.9771	0.70523	1.29467
21	+9.57733	+0.9378	-1.20717	-1.02178	6	+9.69325	+0.9791	-0.67852	-1.29664
22	9.57857	0.9376	1.20266	1.03389	7	9.69618	0.9810	0.64995	1.29848
23	9.57941	0.9378	1.19798	1.04554	8	9.69952	0.9825	0.61923	1.30019
24	9.58004	0.9387	1.19312	1.05676	9	9.70312	0.9834	0.58606	1.30177
25	9.58082	0.9403	1.18809	1.06757	10	9.70673	0.9839	0.55002	1.30322
26	+9.58215	+0.9425	-1.18287	-1.07800	11	+9.71019	+0.9838	-0.51059	-1.30455
27	9.58433	0.9452	1.17746	1.08805	12	9.71337	0.9833	0.46710	1.30576
28	9.58752	0.9480	1.17186	1.09774	13	9.71621	0.9826	0.41864	1.30684
29	9.59159	0.9503	1.16606	1.10710	14	9.71864	0.9817	0.36395	1.30780
30	9.59622	0.9519	1.16006	1.11613	15	9.72068	0.9809	0.30123	1.30864
May 1	+9.60093	+0.9525	-1.15386	-1.12485	16	+9.72235	+0.9802	-0.22777	-1.30935
2	9.60516	0.9523	1.14744	1.13327	17	9.72374	0.9799	0.13917	1.30995
3	9.60856	0.9515	1.14080	1.14141	18	9.72505	0.9802	0.02758	1.31042
4	9.61097	0.9507	1.13394	1.14927	h 19	9.72656	0.9811	9.87686	1.31077
5	9.61248	0.9502	1.12685	1.15686	(18.0) 20	9.72852	0.9825	9.64391	1.31100
h (15.0) 6	+9.61341	+0.9505	-1.11951	-1.16420	21	+9.73113	+0.9842	-9.10622	-1.31111
7	9.61421	0.9517	1.11193	1.17129	22	9.73445	0.9858	+9.26732	1.31110
8	9.61534	0.9536	1.10409	1.17814	23	9.73837	0.9869	9.69702	1.31096
9	9.61707	0.9560	1.09599	1.18475	24	9.74259	0.9872	9.90865	1.31071
10	9.61953	0.9586	1.08761	1.19115	25	9.74674	0.9866	0.05022	1.31034
11	+9.62261	+0.9609	-1.07895	-1.19732	26	+9.75045	+0.9853	+0.15671	-1.30985
12	9.62618	0.9628	1.06998	1.20329	27	9.75350	0.9835	0.24205	1.30923
13	9.62989	0.9641	1.06071	1.20905	28	9.75577	0.9818	0.31324	1.30850
14	9.63361	0.9650	1.05111	1.21462	29	9.75738	0.9805	0.37427	1.30764
15	9.63713	0.9653	1.04117	1.21999	30	9.75859	0.9799	0.42766	1.30666
16	+9.64030	+0.9653	-1.03087	-1.22517	July 1	+9.75980	+0.9802	+0.47509	-1.30556
17	+9.64308	+0.9650	-1.02021	-1.23016	2	+9.76121	+0.9811	+0.51773	-1.30433

E = + 0.01' = + 0.001"

FOR WASHINGTON MEAN MIDNIGHT.

Solar Day. (Sid. Hour.)	Log A.	Log B.	Log C.	Log D.	Solar Day. (Sid. Hour.)	Log A.	Log B.	Log C.	Log D.
July 1	+9.75980	+0.9802	+0.47509	-1.30556	Aug. 16	+9.84316	+0.9581	+1.17672	-1.08937
2	9.76121	0.9811	0.51773	1.30433	17	9.84556	0.9582	1.18209	1.07948
3	9.76308	0.9823	0.55644	1.30298	18	9.84813	0.9574	1.18728	1.06923
h 4	9.76542	0.9835	0.59187	1.30151	h 19	9.85060	0.9558	1.19229	1.05860
(19.0) 5	9.76816	0.9844	0.62451	1.29991	(22.0) 20	9.85270	0.9535	1.19713	1.04757
6	+9.77115	+0.9848	+0.65476	-1.29818	21	+9.85424	+0.9509	+1.20179	-1.03613
7	9.77421	0.9847	0.68292	1.29633	22	9.85520	0.9485	1.20628	1.02424
8	9.77716	0.9841	0.70926	1.29435	23	9.85574	0.9467	1.21061	1.01189
9	9.77991	0.9830	0.73397	1.29224	24	9.85605	0.9458	1.21477	0.99904
10	9.78235	0.9816	0.75724	1.28999	25	9.85638	0.9458	1.21878	0.98567
11	+9.78445	+0.9800	+0.77922	-1.28761	26	+9.85696	+0.9464	+1.22263	-0.97174
12	9.78618	0.9784	0.80003	1.28510	27	9.85792	0.9474	1.22632	0.95722
13	9.78757	0.9770	0.81977	1.28246	28	9.85925	0.9483	1.22986	0.94206
14	9.78868	0.9758	0.83854	1.27967	29	9.86086	0.9488	1.23325	0.92622
15	9.78963	0.9752	0.85642	1.27675	30	9.86259	0.9487	1.23649	0.90964
16	+9.79062	+0.9752	+0.87348	-1.27369	31	+9.86431	+0.9481	+1.23959	-0.89227
17	9.79192	0.9758	0.88978	1.27048	Sept. 1	9.86590	0.9470	1.24254	0.87404
18	9.79371	0.9768	0.90538	1.26712	2	9.86727	0.9456	1.24535	0.85488
19	9.79607	0.9778	0.92033	1.26362	h 3	9.86840	0.9438	1.24802	0.83469
20	9.79902	0.9785	0.93466	1.25997	(23.0) 4	9.86926	0.9421	1.25055	0.81337
h (20.0) 21	+9.80235	+0.9784	+0.94842	-1.25616	5	+9.86982	+0.9404	+1.25295	-0.79081
22	9.80575	0.9775	0.96165	1.25219	6	9.87013	0.9389	1.25521	0.76688
23	9.80890	0.9758	0.97437	1.24807	7	9.87025	0.9380	1.25733	0.74140
24	9.81151	0.9735	0.98662	1.24379	8	9.87029	0.9377	1.25932	0.71418
25	9.81347	0.9710	0.99841	1.23934	9	9.87044	0.9381	1.26118	0.68500
26	+9.81484	+0.9689	+1.00977	-1.23472	10	+9.87085	+0.9391	+1.26291	-0.65356
27	9.81574	0.9674	1.02073	1.22993	11	9.87169	0.9405	1.26451	0.61950
28	9.81651	0.9668	1.03130	1.22496	12	9.87304	0.9419	1.26597	0.58239
29	9.81736	0.9670	1.04151	1.21981	13	9.87478	0.9428	1.26731	0.54165
30	9.81856	0.9677	1.05136	1.21447	14	9.87679	0.9429	1.26852	0.49651
31	+9.82016	+0.9685	+1.06088	-1.20895	15	+9.87883	+0.9421	+1.26960	-0.44596
Aug. 1	9.82212	0.9691	1.07008	1.20323	16	9.88059	0.9405	1.27056	0.38856
2	9.82437	0.9692	1.07897	1.19731	17	9.88190	0.9385	1.27139	0.32221
3	9.82668	0.9688	1.08756	1.19119	18	9.88269	0.9365	1.27209	0.24366
h 4	9.82897	0.9679	1.09587	1.18485	h 19	9.88304	0.9350	1.27266	0.14746
(21.0) 5	+9.83106	+0.9665	+1.10391	-1.17829	(0.0) 20	+9.88311	+0.9344	+1.27311	-0.02347
6	9.83292	0.9647	1.11168	1.17151	21	9.88317	0.9348	1.27342	9.84895
7	9.83448	0.9628	1.11920	1.16450	22	9.88343	0.9360	1.27362	9.55214
8	9.83572	0.9607	1.12648	1.15724	23	9.88404	0.9377	1.27368	-7.81886
9	9.83666	0.9588	1.13351	1.14974	24	9.88502	0.9394	1.27362	+9.53600
10	+9.83729	+0.9572	+1.14032	-1.14198	25	+9.88633	+0.9408	+1.27343	+9.84122
11	9.83774	0.9561	1.14691	1.13395	26	9.88783	0.9418	1.27312	0.01869
12	9.83817	0.9556	1.15328	1.12564	27	9.88935	0.9421	1.27267	0.14427
13	9.83876	0.9558	1.15944	1.11704	28	9.89079	0.9419	1.27210	0.24151
14	9.83971	0.9565	1.16539	1.10813	29	9.89206	0.9413	1.27140	0.32084
15	+9.84118	+0.9574	+1.17115	-1.09891	30	+9.89310	+0.9404	+1.27057	+0.38781
16	+9.84316	+0.9581	+1.17672	-1.08937	Oct. 1	+9.89388	+0.9395	+1.26961	+0.44574

BESSELIAN STAR-NUMBERS, 1903.

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(CONSTANTS OF PARIS CONFERENCE.)

FOR WASHINGTON MEAN MIDNIGHT.

Solar Day. (Sid. Hour.)	Log A.	Log B.	Log C.	Log D.	Solar Day. (Sid. Hour.)	Log A.	Log B.	Log C.	Log D.
Oct. 1	+9.89388	+0.9395	+1.26961	+0.44574	Nov. 16	+9.94086	+0.9737	+1.04619	+1.21732
2	9.89443	0.9385	1.26852	0.49675	17	9.94206	0.9761	1.03559	1.22284
3	9.89474	0.9378	1.26729	0.54231	18	9.94361	0.9785	1.02458	1.22816
h (1.0) 4	9.89489	0.9376	1.26594	0.58344	(4.0) 19	9.94545	0.9804	1.01314	1.23328
5	9.89492	0.9379	1.26445	0.62091	20	9.94744	0.9818	1.00125	1.23822
6	+9.89500	+0.9389	+1.26282	+0.65530	21	+9.94944	+0.9826	+0.98888	+1.24296
7	9.89533	0.9405	1.26106	0.68707	22	9.95132	0.9828	0.97600	1.24752
8	9.89601	0.9426	1.25916	0.71657	23	9.95303	0.9828	0.96259	1.25190
9	9.89717	0.9449	1.25712	0.74409	24	9.95450	0.9824	0.94860	1.25611
10	9.89875	0.9468	1.25494	0.76986	25	9.95576	0.9820	0.93401	1.26014
11	+9.90065	+0.9480	+1.25262	+0.79408	26	+9.95680	+0.9817	+0.91876	+1.26400
12	9.90263	0.9484	1.25015	0.81691	27	9.95767	0.9816	0.90281	1.26770
13	9.90447	0.9479	1.24754	0.83849	28	9.95843	0.9819	0.88611	1.27123
14	9.90593	0.9469	1.24478	0.85894	29	9.95916	0.9827	0.86860	1.27459
15	9.90692	0.9457	1.24187	0.87836	30	9.96000	0.9840	0.85020	1.27780
16	+9.90747	+0.9448	+1.23880	+0.89683	Dec. 1	+9.96108	+0.9859	+0.83084	+1.28085
17	9.90771	0.9447	1.23558	0.91444	2	9.96254	0.9880	0.81043	1.28375
18	9.90787	0.9455	1.23221	0.93124	3	9.96438	0.9900	0.78886	1.28649
h (2.0) 19	9.90816	0.9472	1.22867	0.94731	h (5.0) 4	9.96659	0.9916	0.76601	1.28908
20	9.90879	0.9495	1.22497	0.96267	5	9.96902	0.9925	0.74175	1.29152
21	+9.90979	+0.9519	+1.22110	+0.97740	6	+9.97144	+0.9926	+0.71590	+1.29381
22	9.91116	0.9542	1.21707	0.99152	7	9.97367	0.9918	0.68825	1.29595
23	9.91276	0.9560	1.21286	1.00508	8	9.97551	0.9906	0.65857	1.29795
24	9.91448	0.9572	1.20847	1.01811	9	9.97693	0.9894	0.62655	1.29980
25	9.91614	0.9579	1.20391	1.03064	10	9.97795	0.9885	0.59183	1.30151
26	+9.91767	+0.9580	+1.19916	+1.04269	11	+9.97874	+0.9884	+0.55392	+1.30308
27	9.91900	0.9579	1.19423	1.05429	12	9.97950	0.9890	0.51222	1.30450
28	9.92009	0.9576	1.18910	1.06547	13	9.98044	0.9904	0.46592	1.30579
29	9.92096	0.9573	1.18377	1.07624	14	9.98165	0.9921	0.41392	1.30694
30	9.92159	0.9572	1.17824	1.08663	15	9.98320	0.9938	0.35466	1.30794
31	+9.92207	+0.9573	+1.17251	+1.09666	16	+9.98504	+0.9952	+0.28584	+1.30881
Nov. 1	9.92246	0.9580	1.16656	1.10633	17	9.98706	0.9961	0.20384	1.30954
2	9.92286	0.9593	1.16039	1.11566	18	9.98911	0.9964	0.10247	1.31013
h (3.0) 3	9.92343	0.9612	1.15399	1.12467	h (6.0) 19	9.99109	0.9961	9.96980	1.31058
4	9.92432	0.9635	1.14736	1.13338	20	9.99289	0.9954	9.77757	1.31090
5	+9.92563	+0.9661	+1.14049	+1.14178	21	+9.99450	+0.9945	+9.42379	+1.31108
6	9.92738	0.9685	1.13337	1.14990	22	9.99589	0.9934	-8.83657	1.31112
7	9.92947	0.9703	1.12599	1.15775	23	9.99706	0.9923	9.60487	1.31102
8	9.93172	0.9713	1.11834	1.16533	24	9.99804	0.9914	9.86714	1.31078
9	9.93390	0.9715	1.11042	1.17265	25	9.99888	0.9907	0.02942	1.31041
10	+9.93579	+0.9710	+1.10221	+1.17972	26	+9.99966	+0.9906	-0.14717	+1.30990
11	9.93726	0.9701	1.09370	1.18655	27	0.00046	0.9909	0.23961	1.30925
12	9.93827	0.9694	1.08487	1.19315	28	0.00146	0.9918	0.31566	1.30847
13	9.93895	0.9693	1.07573	1.19952	29	0.00272	0.9930	0.38024	1.30754
14	9.93945	0.9700	1.06624	1.20567	30	0.00435	0.9943	0.43632	1.30648
15	+9.94004	+0.9715	+1.05640	+1.21160	31	+0.00632	+0.9952	-0.48587	+1.30527
16	+9.94086	+0.9737	+1.04619	+1.21732	32	+0.00855	+0.9955	-0.53020	+1.30392

$$E = + 0.00' = + 0.000''$$

FOR WASHINGTON MEAN MIDNIGHT.

Solar Day. (Sid. Hour.)	τ	f	f'	G		H		Log g .	Log h .	i	Log i .		
		In Time.	In Time.	In Arc.	In Time.	In Arc.	In Time.						
Jan.	0	y -0.0009	s +0.412	s +0.007	° 73 29.3	h m 4 53.9	° 351 09.2	h m 23 24.6	+0.98243	+1.31015	" -1.36	-0.1343	
	1	+0.0018	0.422	0.007	73 03.8	4 52.4	350 12.8	23 20.9	0.98191	1.30994	1.50	0.1776	
	2	0.0046	0.433	0.005	72 42.0	4 50.8	349 16.4	23 17.1	0.98126	1.30971	1.65	0.2168	
	3	0.0073	0.443	+0.001	72 24.2	4 49.6	348 19.9	23 13.3	0.98066	1.30945	1.79	0.2526	
	h (7.0)	4	0.0101	0.453	-0.003	72 10.3	4 48.7	347 23.3	23 09.6	0.98037	1.30918	1.93	0.2856
	5	0.0128	+0.463	-0.008	71 58.8	4 47.9	346 26.6	23 05.8	+0.98069	+1.30889	-2.07	-0.3161	
	6	0.0155	0.473	0.013	71 47.3	4 47.2	345 29.9	23 02.0	0.98169	1.30857	2.21	0.3449	
	7	0.0183	0.483	0.015	71 33.1	4 46.2	344 33.1	22 58.2	0.98340	1.30824	2.35	0.3710	
	8	0.0210	0.493	0.015	71 13.8	4 44.9	343 36.2	22 54.4	0.98557	1.30789	2.49	0.3958	
	9	0.0237	0.503	0.012	70 48.1	4 43.2	342 39.2	22 50.6	0.98787	1.30752	2.63	0.4192	
	10	0.0265	+0.513	-0.006	70 16.3	4 41.1	341 42.2	22 46.8	+0.98992	+1.30713	-2.76	-0.4412	
	11	0.0292	0.523	+0.001	69 40.0	4 38.7	340 45.0	22 43.0	0.99129	1.30672	2.90	0.4621	
	12	0.0320	0.532	0.007	69 02.3	4 36.2	339 47.7	22 39.2	0.99191	1.30630	3.03	0.4818	
	13	0.0347	0.542	0.012	68 26.3	4 33.8	338 50.4	22 35.4	0.99163	1.30586	3.17	0.5006	
	14	0.0374	0.551	0.014	67 55.3	4 31.7	337 52.9	22 31.5	0.99083	1.30540	3.30	0.5184	
	15	0.0402	+0.561	+0.013	67 30.7	4 30.0	336 55.3	22 27.7	+0.98979	+1.30493	-3.43	-0.5355	
	16	0.0429	0.570	0.010	67 12.8	4 28.9	335 57.6	22 23.8	0.98899	1.30444	3.56	0.5517	
	17	0.0456	0.580	+0.005	67 00.3	4 28.0	334 59.7	22 20.0	0.98867	1.30394	3.69	0.5672	
	18	0.0484	0.589	0.000	66 50.5	4 27.4	334 01.7	22 16.1	0.98902	1.30342	3.82	0.5821	
	h (8.0)	19	0.0511	0.598	-0.004	66 40.6	4 26.7	333 03.6	22 12.2	0.99004	1.30289	3.95	0.5963
	20	0.0539	+0.607	-0.006	66 28.2	4 25.9	332 05.4	22 08.4	+0.99151	+1.30235	-4.07	-0.6099	
	21	0.0566	0.616	0.006	66 12.3	4 24.8	331 07.0	22 04.5	0.99320	1.30179	4.20	0.6230	
	22	0.0593	0.625	0.005	65 52.4	4 23.5	330 08.4	22 00.6	0.99484	1.30122	4.32	0.6356	
	23	0.0621	0.634	-0.002	65 29.4	4 22.0	329 09.7	21 56.6	0.99622	1.30064	4.44	0.6477	
	24	0.0648	0.642	+0.001	65 04.1	4 20.3	328 10.9	21 52.7	0.99722	1.30005	4.56	0.6593	
	25	0.0675	+0.651	+0.004	64 37.7	4 18.5	327 11.9	21 48.8	+0.99783	+1.29945	-4.68	-0.6705	
	26	0.0703	0.659	0.006	64 11.1	4 16.7	326 12.8	21 44.9	0.99798	1.29884	4.80	0.6812	
	27	0.0730	0.668	0.008	63 45.3	4 15.0	325 13.5	21 40.9	0.99777	1.29822	4.92	0.6916	
	28	0.0758	0.676	0.008	63 21.6	4 13.4	324 14.0	21 36.9	0.99719	1.29759	5.03	0.7016	
	29	0.0785	0.684	0.006	63 01.0	4 12.1	323 14.4	21 33.0	0.99633	1.29696	5.14	0.7112	
	30	0.0812	+0.692	+0.003	62 44.3	4 11.0	322 14.6	21 29.0	+0.99541	+1.29632	-5.25	-0.7205	
	31	0.0840	0.700	-0.001	62 31.7	4 10.1	321 14.7	21 25.0	0.99464	1.29567	5.36	0.7295	
	Feb.	1	0.0867	0.708	0.006	62 22.8	4 09.5	320 14.6	21 21.0	0.99427	1.29502	5.47	0.7381
2		0.0895	0.716	0.011	62 15.8	4 09.1	319 14.4	21 17.0	0.99453	1.29437	5.58	0.7464	
h (9.0)		3	0.0922	0.724	0.014	62 08.5	4 08.6	318 14.0	21 12.9	0.99549	1.29371	5.68	0.7545
4		0.0949	+0.732	-0.015	61 58.3	4 07.9	317 13.4	21 08.9	+0.99710	+1.29305	-5.78	-0.7622	
5		0.0977	0.739	0.013	61 42.7	4 06.8	316 12.7	21 04.8	0.99909	1.29239	5.88	0.7697	
6		0.1004	0.746	0.009	61 20.7	4 05.4	315 11.8	21 00.8	1.00108	1.29173	5.98	0.7770	
7		0.1031	0.754	-0.003	60 53.2	4 03.5	314 10.8	20 56.7	1.00271	1.29106	6.08	0.7839	
8		0.1059	0.761	+0.004	60 22.3	4 01.5	313 09.6	20 52.6	1.00364	1.29040	6.18	0.7906	
9		0.1086	+0.768	+0.009	59 51.0	3 59.4	312 08.2	20 48.5	+1.00379	+1.28974	-6.27	-0.7971	
10		0.1114	0.775	0.012	59 22.6	3 57.5	311 06.7	20 44.4	1.00321	1.28908	6.36	0.8034	
11		0.1141	0.782	0.012	58 59.7	3 56.0	310 05.0	20 40.3	1.00220	1.28843	6.45	0.8094	
12		0.1168	0.789	0.010	58 43.4	3 54.9	309 03.2	20 36.2	1.00116	1.28778	6.53	0.8152	
13		0.1196	0.796	0.006	58 33.2	3 54.2	308 01.2	20 32.1	1.00043	1.28714	6.62	0.8208	
14		0.1223	+0.802	+0.001	58 27.2	3 53.8	306 59.0	20 27.9	+1.00029	+1.28650	-6.70	-0.8262	
15		0.1250	+0.809	-0.003	58 23.2	3 53.5	305 56.7	20 23.8	+1.00080	+1.28587	-6.78	-0.8314	

INDEPENDENT STAR-NUMBERS, 1903.

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(CONSTANTS OF PARIS CONFERENCE.)

FOR WASHINGTON MEAN MIDNIGHT.

Solar Day. (Sid. Hour.)	τ	f		f'		G		H		Log g .	Log h .	i	Log i .
		In Time.		In Time.		In Arc.	In Time.	In Arc.	In Time.				
	y	s		s		$^{\circ}$ $'$	h m	$^{\circ}$ $'$	h m			$''$	
Feb.	15	0.1250	+ 0.809	- 0.003	58 23.2	3 53.5	305 56.7	20 23.8	+1.00080	+1.28587	- 6.78	- 0.8314	
	16	0.1278	0.815	0.005	58 18.3	3 53.2	304 54.2	20 19.6	1.00191	1.28524	6.86	0.8364	
	17	0.1305	0.822	0.006	58 10.3	3 52.7	303 51.6	20 15.4	1.00338	1.28463	6.94	0.8412	
	18	0.1333	0.828	0.005	57 58.7	3 51.9	302 48.8	20 11.2	1.00496	1.28402	7.01	0.8458	
	(10.0) 19	0.1360	0.834	- 0.003	57 43.8	3 50.9	301 45.8	20 07.0	1.00641	1.28343	7.08	0.8502	
	20	0.1387	+ 0.840	0.000	57 26.0	3 49.7	300 42.7	20 02.8	+1.00759	+1.28284	- 7.15	- 0.8545	
	21	0.1415	0.846	+ 0.003	57 06.5	3 48.5	299 39.5	19 58.6	1.00839	1.28227	7.22	0.8585	
	22	0.1442	0.852	0.006	56 46.1	3 47.1	298 36.1	19 54.4	1.00884	1.28171	7.28	0.8624	
	23	0.1470	0.858	0.007	56 26.1	3 45.7	297 32.6	19 50.2	1.00886	1.28116	7.35	0.8662	
	24	0.1497	0.864	0.008	56 07.3	3 44.5	296 28.9	19 45.9	1.00854	1.28063	7.41	0.8697	
	25	0.1524	+ 0.870	+ 0.007	55 50.9	3 43.4	295 25.1	19 41.7	+1.00790	+1.28011	- 7.47	- 0.8731	
	26	0.1552	0.875	0.005	55 38.0	3 42.5	294 21.2	19 37.4	1.00710	1.27961	7.52	0.8764	
	27	0.1579	0.881	+ 0.001	55 29.1	3 41.9	293 17.2	19 33.1	1.00633	1.27913	7.58	0.8795	
	28	0.1606	0.886	- 0.004	55 24.3	3 41.6	292 13.1	19 28.9	1.00582	1.27866	7.63	0.8824	
	Mar. 1	0.1634	0.892	0.008	55 22.6	3 41.5	291 08.9	19 24.6	1.00583	1.27821	7.68	0.8852	
	2	0.1661	+ 0.897	- 0.012	55 22.4	3 41.5	290 04.6	19 20.3	+1.00656	+1.27777	- 7.72	- 0.8878	
	3	0.1689	0.903	0.014	55 20.5	3 41.4	289 00.2	19 16.0	1.00794	1.27736	7.77	0.8903	
	4	0.1716	0.908	0.013	55 14.9	3 41.0	287 55.7	19 11.7	1.00988	1.27697	7.81	0.8926	
	5	0.1743	0.913	0.010	55 03.7	3 40.2	286 51.1	19 07.4	1.01206	1.27659	7.85	0.8948	
	(11.0) 6	0.1771	0.918	- 0.004	54 46.6	3 39.1	285 46.5	19 03.1	1.01409	1.27624	7.88	0.8968	
	7	0.1798	+ 0.923	+ 0.002	54 24.7	3 37.6	284 41.8	18 58.8	+1.01562	+1.27591	- 7.92	- 0.8987	
	8	0.1825	0.928	0.007	54 01.0	3 36.1	283 37.0	18 54.5	1.01640	1.27560	7.95	0.9005	
	9	0.1853	0.933	0.011	53 38.1	3 34.5	282 32.2	18 50.1	1.01647	1.27531	7.98	0.9021	
	10	0.1880	0.938	0.012	53 19.3	3 33.3	281 27.4	18 45.8	1.01595	1.27504	8.01	0.9036	
	11	0.1908	0.943	0.010	53 06.5	3 32.5	280 22.5	18 41.5	1.01522	1.27480	8.03	0.9049	
	12	0.1935	+ 0.948	+ 0.006	53 00.0	3 32.0	279 17.6	18 37.2	+1.01461	+1.27458	- 8.06	- 0.9061	
	13	0.1962	0.953	+ 0.002	52 58.6	3 31.9	278 12.6	18 32.8	1.01447	1.27439	8.08	0.9072	
	14	0.1990	0.958	- 0.003	53 00.0	3 32.0	277 07.6	18 28.5	1.01500	1.27421	8.09	0.9081	
	15	0.2017	0.963	0.006	53 01.8	3 32.1	276 02.7	18 24.2	1.01614	1.27406	8.11	0.9089	
	16	0.2044	0.968	0.007	53 01.5	3 32.1	274 57.7	18 19.8	1.01779	1.27394	8.12	0.9096	
	17	0.2072	+ 0.973	- 0.006	52 57.8	3 31.7	273 52.7	18 15.5	+1.01970	+1.27384	- 8.13	- 0.9101	
	18	0.2099	0.978	0.004	52 50.5	3 31.4	272 47.7	18 11.2	1.02160	1.27377	8.14	0.9105	
	19	0.2127	0.982	- 0.001	52 40.1	3 30.7	271 42.7	18 06.8	1.02331	1.27372	8.14	0.9108	
	20	0.2154	0.987	+ 0.002	52 27.3	3 29.8	270 37.8	18 02.5	1.02471	1.27369	8.14	0.9109	
	(12.0) 21	0.2181	0.992	0.005	52 13.4	3 28.9	269 32.9	17 58.2	1.02574	1.27369	8.14	0.9109	
	22	0.2209	+ 0.997	+ 0.007	51 59.0	3 27.9	268 28.0	17 53.9	+1.02643	+1.27371	- 8.14	- 0.9108	
	23	0.2236	1.001	0.008	51 45.7	3 27.0	267 23.1	17 49.5	1.02673	1.27376	8.14	0.9106	
	24	0.2264	1.006	0.008	51 34.0	3 26.3	266 18.3	17 45.2	1.02673	1.27383	8.13	0.9102	
	25	0.2291	1.011	0.006	51 24.7	3 25.6	265 13.6	17 40.9	1.02656	1.27392	8.12	0.9097	
	26	0.2318	1.016	+ 0.002	51 19.0	3 25.3	264 08.9	17 36.6	1.02630	1.27404	8.11	0.9090	
	27	0.2346	+ 1.021	- 0.002	51 17.1	3 25.1	263 04.3	17 32.3	+1.02623	+1.27418	- 8.10	- 0.9082	
	28	0.2373	1.026	0.007	51 18.7	3 25.2	261 59.8	17 28.0	1.02653	1.27435	8.08	0.9074	
	29	0.2400	1.031	0.011	51 22.5	3 25.5	260 55.4	17 23.7	1.02745	1.27454	8.06	0.9063	
	30	0.2428	1.035	0.013	51 26.1	3 25.7	259 51.1	17 19.4	1.02907	1.27475	8.04	0.9052	
	31	0.2455	1.040	0.013	51 26.8	3 25.8	258 46.9	17 15.1	1.03126	1.27499	8.01	0.9039	
	Apr. 1	0.2483	+ 1.045	- 0.010	51 23.1	3 25.5	257 42.8	17 10.9	+1.03390	+1.27525	- 7.99	- 0.9024	
	2	0.2510	+ 1.050	- 0.005	51 13.6	3 24.9	256 38.8	17 06.6	+1.03655	+1.27553	- 7.96	- 0.9009	

FOR WASHINGTON MEAN MIDNIGHT.

Solar Day. (Sid. Hour.)	τ	f		f'		G		H		Log g .	Log h .	i	Log i .
		In Time.	In Time.	In Arc.	In Time.	In Arc.	In Time.						
	y	s	s	$^{\circ}$	h m	$^{\circ}$	h m					$''$	
Apr. <													

(CONSTANTS OF PARIS CONFERENCE.)

FOR WASHINGTON MEAN MIDNIGHT.

Solar Day. (Sid. Hour.)	τ	f		f'		G		H		Log g .	Log h .	i	Log i .	
		In Time.	In Time.	In Arc.	In Time.	In Arc.	In Time.							
		y	s	s	$^{\circ}$	$h\ m$	$^{\circ}$	$h\ m$						
May	17	0.3742	+ 1.344	+ 0.008	46 18.7	3 05.2	211 39.6	14 06.6	+1.10582	+1.30014	-4.54	-0.6574		
	18	0.3769	1.352	0.006	46 08.1	3 04.5	210 44.0	14 02.9	1.10673	1.30070	4.43	0.6464		
	19	0.3797	1.361	+ 0.004	45 59.6	3 04.0	209 48.5	13 59.2	1.10750	1.30125	4.31	0.6349		
	h	20	0.3824	1.369	0.000	45 53.9	3 03.6	208 53.1	13 55.5	1.10823	1.30179	4.20	0.6230	
	(16.0)	21	0.3851	1.378	- 0.005	45 50.9	3 03.4	207 57.9	13 51.9	1.10912	1.30232	4.08	0.6107	
	22	0.3879	+ 1.386	- 0.009	45 50.5	3 03.4	207 02.8	13 48.2	+1.11034	+1.30283	-3.96	-0.5978		
	23	0.3906	1.395	0.013	45 51.1	3 03.4	206 07.9	13 44.5	1.11207	1.30333	3.84	0.5845		
	24	0.3934	1.404	0.014	45 51.2	3 03.4	205 13.2	13 40.9	1.11436	1.30383	3.72	0.5706		
	25	0.3961	1.413	0.013	45 48.4	3 03.2	204 18.6	13 37.2	1.11712	1.30431	3.60	0.5561		
	26	0.3988	1.422	0.009	45 41.5	3 02.8	203 24.1	13 33.6	1.12016	1.30477	3.48	0.5410		
	27	0.4016	+ 1.431	- 0.003	45 29.7	3 02.0	202 29.7	13 30.0	+1.12319	+1.30522	-3.35	-0.5252		
	28	0.4043	1.440	+ 0.003	45 13.6	3 00.9	201 35.5	13 26.4	1.12586	1.30566	3.23	0.5087		
	29	0.4071	1.449	0.009	44 55.0	2 59.7	200 41.4	13 22.8	1.12800	1.30608	3.10	0.4915		
	30	0.4098	1.458	0.013	44 36.4	2 58.4	199 47.4	13 19.2	1.12952	1.30649	2.97	0.4734		
	31	0.4125	1.467	0.014	44 20.2	2 57.3	198 53.6	13 15.6	1.13049	1.30688	2.85	0.4544		
	June	1	0.4153	+ 1.477	+ 0.012	44 07.9	2 56.5	197 59.9	13 12.0	+1.13114	+1.30725	-2.72	-0.4344	
		2	0.4180	1.486	0.008	44 00.7	2 56.0	197 06.2	13 08.4	1.13176	1.30761	2.59	0.4134	
		3	0.4207	1.495	+ 0.003	43 57.6	2 55.8	196 12.7	13 04.8	1.13260	1.30796	2.46	0.3911	
		h	4	0.4235	1.505	- 0.002	43 57.0	2 55.8	195 19.3	13 01.3	1.13389	1.30829	2.33	0.3675
		(17.0)	5	0.4262	1.514	0.006	43 57.1	2 55.8	194 26.0	12 57.7	1.13566	1.30860	2.20	0.3425
6		0.4290	+ 1.524	- 0.007	43 55.8	2 55.7	193 32.8	12 54.2	+1.13784	+1.30889	-2.07	-0.3158		
7		0.4317	1.533	0.006	43 51.7	2 55.4	192 39.6	12 50.6	1.14027	1.30917	1.94	0.2872		
8		0.4344	1.543	0.004	43 44.4	2 55.0	191 46.6	12 47.1	1.14273	1.30942	1.80	0.2565		
9		0.4372	1.553	- 0.001	43 34.0	2 54.3	190 53.6	12 43.6	1.14508	1.30966	1.67	0.2233		
10		0.4399	1.562	+ 0.002	43 21.5	2 53.4	190 00.7	12 40.0	1.14719	1.30989	1.54	0.1873		
	11	0.4426	+ 1.572	+ 0.005	43 07.6	2 52.5	189 07.8	12 36.5	+1.14900	+1.31009	-1.41	-0.1478		
	12	0.4454	1.582	0.007	42 53.2	2 51.5	188 15.0	12 33.0	1.15048	1.31028	1.27	0.1044		
	13	0.4481	1.591	0.008	42 39.1	2 50.6	187 22.2	12 29.5	1.15167	1.31045	1.14	0.0559		
	14	0.4509	1.601	0.007	42 26.0	2 49.7	186 29.5	12 26.0	1.15259	1.31060	1.00	0.0012		
	15	0.4536	1.611	0.005	42 14.7	2 49.0	185 36.9	12 22.5	1.15333	1.31073	0.87	9.9385		
	16	0.4563	+ 1.621	+ 0.001	42 05.3	2 48.4	184 44.3	12 19.0	+1.15392	+1.31084	-0.73	-9.8650		
	17	0.4591	1.631	- 0.003	41 58.8	2 47.9	183 51.7	12 15.4	1.15457	1.31093	0.60	9.7764		
	18	0.4618	1.640	0.008	41 54.8	2 47.7	182 59.1	12 11.9	1.15543	1.31101	0.46	9.6648		
	h	19	0.4645	1.650	0.012	41 52.4	2 47.5	182 06.5	12 08.4	1.15666	1.31106	0.33	9.5141	
	(18.0)	20	0.4673	1.660	0.015	41 50.3	2 47.4	181 14.0	12 04.9	1.15839	1.31110	0.19	9.2812	
	21	0.4700	+ 1.670	- 0.015	41 46.7	2 47.1	180 21.4	12 01.4	+1.16059	+1.31112	-0.06	-8.7435		
	22	0.4728	1.680	0.012	41 39.9	2 46.7	179 28.9	11 57.9	1.16314	1.31112	+ 0.08	+8.9046		
	23	0.4755	1.690	- 0.007	41 28.8	2 45.9	178 36.4	11 54.4	1.16582	1.31109	0.22	9.3343		
	24	0.4782	1.699	0.000	41 13.4	2 44.9	177 43.9	11 50.9	1.16832	1.31105	0.35	9.5459		
	25	0.4810	1.709	+ 0.006	40 54.9	2 43.7	176 51.3	11 47.4	1.17044	1.31100	0.49	9.6875		
	26	0.4837	+ 1.719	+ 0.011	40 35.1	2 42.3	175 58.8	11 43.9	+1.17199	+1.31092	+ 0.62	+9.7940		
	27	0.4865	1.729	0.014	40 16.3	2 41.1	175 06.2	11 40.4	1.17302	1.31082	0.76	9.8793		
	28	0.4892	1.739	0.013	40 00.7	2 40.0	174 13.6	11 36.9	1.17363	1.31071	0.89	9.9505		
	29	0.4919	1.748	0.010	39 49.3	2 39.3	173 21.0	11 33.4	1.17403	1.31057	1.03	0.0115		
	30	0.4947	1.758	+ 0.005	39 42.5	2 38.8	172 28.4	11 29.9	1.17453	1.31042	1.16	0.0649		
July	1	0.4974	+ 1.768	0.000	39 38.7	2 38.6	171 35.6	11 26.4	+1.17534	+1.31025	+ 1.30	+0.1123		
	2	0.5001	+ 1.778	- 0.004	39 36.6	2 38.4	170 43.0	11 22.9	+1.17653	+1.31006	+ 1.43	+0.1550		

FOR WASHINGTON MEAN MIDNIGHT.

Solar Day. (Sid. Hour.)		τ	f'	f''	G		H		Log g .	Log h .	i	Log i .	
			In Time.	In Time.	In Arc.	In Time.	In Arc.	In Time.					
July	y	s	s	°	h m	°	h m						
	1	0.4974	+ 1.768	0.000	39 38.7	2 38.6	171 35.6	11 26.4	+1.17534	+1.31025	+ 1.30	+ 0.1123	
	2	0.5001	1.778	- 0.004	39 36.6	2 38.4	170 43.0	11 22.9	1.17653	1.31006	1.43	0.1550	
	h	3	0.5029	1.787	0.006	39 34.1	2 38.3	169 50.3	11 19.4	1.17814	1.30985	1.56	0.1937
	(19.0)	4	0.5056	1.797	0.006	39 29.8	2 38.0	168 57.5	11 15.8	1.18003	1.30963	1.69	0.2291
	5	0.5084	1.806	0.004	39 22.7	2 37.5	168 04.6	11 12.3	1.18204	1.30938	1.83	0.2618	
	6	0.5111	+ 1.816	- 0.001	39 12.7	2 36.8	167 11.7	11 08.8	+1.18399	+1.30912	+ 1.96	+ 0.2920	
	7	0.5138	1.825	+ 0.002	39 00.4	2 36.0	166 18.7	11 05.2	1.18579	1.30884	2.09	0.3202	
	8	0.5166	1.835	0.005	38 46.4	2 35.1	165 25.7	11 01.7	1.18731	1.30855	2.22	0.3465	
	9	0.5193	1.844	0.007	38 31.7	2 34.1	164 32.5	10 58.2	1.18858	1.30824	2.35	0.3712	
	10	0.5220	1.854	0.008	38 16.9	2 33.1	163 39.3	10 54.6	1.18953	1.30791	2.48	0.3945	
	11	0.5248	+ 1.863	+ 0.008	38 02.8	2 32.2	162 46.0	10 51.1	+1.19023	+1.30756	+ 2.61	+ 0.4165	
	12	0.5275	1.872	0.006	37 50.0	2 31.3	161 52.7	10 47.5	1.19070	1.30720	2.74	0.4373	
	13	0.5303	1.882	+ 0.003	37 39.1	2 30.6	160 59.2	10 43.9	1.19103	1.30683	2.86	0.4570	
	14	0.5330	1.891	- 0.002	37 30.5	2 30.0	160 05.6	10 40.4	1.19130	1.30644	2.99	0.4758	
	15	0.5357	1.900	0.007	37 24.5	2 29.6	159 11.9	10 36.8	1.19167	1.30603	3.12	0.4937	
	16	0.5385	+ 1.909	- 0.011	37 20.7	2 29.4	158 18.1	10 33.2	+1.19229	+1.30561	+ 3.24	+ 0.5107	
	17	0.5412	1.918	0.015	37 18.0	2 29.2	157 24.2	10 29.6	1.19333	1.30517	3.36	0.5270	
	18	0.5439	1.927	0.016	37 14.9	2 29.0	156 30.2	10 26.0	1.19483	1.30472	3.49	0.5426	
	19	0.5467	1.936	0.014	37 09.8	2 28.7	155 36.0	10 22.4	1.19670	1.30426	3.61	0.5576	
	h	20	0.5494	1.945	0.010	37 01.1	2 28.1	154 41.7	1.19882	1.30378	3.73	0.5719	
	(20.0)	21	0.5522	+ 1.954	- 0.004	36 48.3	2 27.2	153 47.2	+1.20093	+1.30329	+ 3.85	+ 0.5857	
	22	0.5549	1.962	+ 0.003	36 32.0	2 26.1	152 52.6	10 11.5	1.20280	1.30279	3.97	0.5989	
	23	0.5576	1.971	0.009	36 13.5	2 24.9	151 57.9	10 07.9	1.20422	1.30228	4.09	0.6116	
	24	0.5604	1.979	0.012	35 55.0	2 23.7	151 03.1	10 04.2	1.20513	1.30176	4.21	0.6239	
	25	0.5631	1.988	0.013	35 38.4	2 22.6	150 08.1	10 00.5	1.20559	1.30122	4.32	0.6356	
	26	0.5659	+ 1.996	+ 0.010	35 25.3	2 21.7	149 13.0	9 56.9	+1.20577	+1.30067	+ 4.44	+ 0.6470	
	27	0.5686	2.004	0.006	35 16.6	2 21.1	148 17.7	9 53.2	1.20589	1.30012	4.55	0.6580	
	28	0.5713	2.013	+ 0.002	35 11.4	2 20.8	147 22.2	9 49.5	1.20620	1.29955	4.66	0.6686	
	29	0.5741	2.021	- 0.002	35 08.9	2 20.6	146 26.6	9 45.8	1.20682	1.29898	4.77	0.6788	
	30	0.5768	2.029	0.005	35 06.9	2 20.5	145 30.9	9 42.1	1.20785	1.29840	4.88	0.6886	
Aug.	31	0.5795	+ 2.037	- 0.006	35 03.9	2 20.2	144 35.0	9 38.3	+1.20918	+1.29781	+ 4.99	+ 0.6981	
	1	0.5823	2.045	0.004	34 58.9	2 19.9	143 38.9	9 34.6	1.21070	1.29722	5.10	0.7073	
	2	0.5850	2.053	- 0.001	34 51.1	2 19.4	142 42.7	9 30.8	1.21226	1.29662	5.20	0.7162	
	3	0.5878	2.060	+ 0.002	34 41.1	2 18.7	141 46.3	9 27.1	1.21369	1.29601	5.31	0.7248	
	h	4	0.5905	2.068	0.005	34 29.1	2 17.9	140 49.7	1.21494	1.29540	5.41	0.7331	
	(21.0)	5	0.5932	+ 2.076	+ 0.007	34 16.1	2 17.1	139 53.0	+1.21591	+1.29478	+ 5.51	+ 0.7412	
	6	0.5960	2.083	0.009	34 02.9	2 16.2	138 56.1	9 15.7	1.21663	1.29417	5.61	0.7489	
	7	0.5987	2.090	0.009	33 50.0	2 15.3	137 59.0	9 11.9	1.21710	1.29355	5.71	0.7564	
	8	0.6014	2.098	0.007	33 38.0	2 14.5	137 01.7	9 08.1	1.21732	1.29292	5.80	0.7637	
	9	0.6042	2.105	0.005	33 27.6	2 13.8	136 04.2	9 04.3	1.21739	1.29229	5.90	0.7708	
	10	0.6069	+ 2.112	+ 0.001	33 19.5	2 13.3	135 06.6	9 00.4	+1.21735	+1.29167	+ 5.99	+ 0.7776	
	11	0.6097	2.119	- 0.004	33 13.8	2 12.9	134 08.7	8 56.6	1.21732	1.29104	6.08	0.7842	
	12	0.6124	2.126	0.009	33 10.5	2 12.7	133 10.7	8 52.7	1.21748	1.29041	6.17	0.7905	
	13	0.6151	2.133	0.013	33 08.9	2 12.6	132 12.4	8 48.8	1.21794	1.28978	6.26	0.7967	
	14	0.6179	2.140	0.015	33 08.0	2 12.5	131 14.0	8 44.9	1.21882	1.28916	6.35	0.8026	
	15	0.6206	+ 2.147	- 0.015	33 05.9	2 12.4	130 15.4	8 41.0	+1.22011	+1.28854	+ 6.43	+ 0.8084	
	16	0.6233	+ 2.153	- 0.012	33 01.3	2 12.1	129 16.6	8 37.1	+1.22171	+1.28792	+ 6.52	+ 0.8140	

(CONSTANTS OF PARIS CONFERENCE.)

FOR WASHINGTON MEAN MIDNIGHT.

Solar Day. (Sid. Hour.)	τ	f'		f''		G		H		Log g .	Log h .	i	Log i .
		In Time.	In Time.	In Arc.	In Time.	In Arc.	In Time						
		y	s	s	$^{\circ}$	h m	$^{\circ}$	h m					
Aug.	16	0.6233	+ 2.153	- 0.012	33 01.3	2 12.1	129 16.6	8 37.1	+1.22171	+1.28792	+ 6.52	+ 0.8140	
	17	0.6261	2.160	- 0.007	32 53.1	2 11.5	128 17.6	8 33.2	1.22345	1.28731	6.60	0.8193	
	18	0.6288	2.166	0.000	32 41.1	2 10.7	127 18.4	8 29.2	1.22504	1.28670	6.68	0.8245	
h	19	0.6316	2.173	+ 0.006	32 26.4	2 09.8	126 19.0	8 25.3	1.22632	1.28609	6.75	0.8295	
(22.0)	20	0.6343	2.179	0.010	32 10.6	2 08.7	125 19.5	8 21.3	1.22716	1.28549	6.83	0.8344	
	21	0.6370	+ 2.185	+ 0.011	31 55.9	2 07.7	124 19.7	8 17.3	+1.22753	+1.28490	+ 6.90	+ 0.8390	
	22	0.6398	2.192	0.010	31 43.9	2 06.9	123 19.7	8 13.3	1.22755	1.28432	6.98	0.8435	
	23	0.6425	2.198	0.007	31 35.7	2 06.4	122 19.6	8 09.3	1.22746	1.28375	7.05	0.8479	
	24	0.6453	2.204	+ 0.002	31 31.3	2 06.1	121 19.2	8 05.3	1.22742	1.28318	7.11	0.8520	
	25	0.6480	2.210	- 0.002	31 30.0	2 06.0	120 18.7	8 01.2	1.22765	1.28262	7.18	0.8560	
	26	0.6507	+ 2.216	- 0.005	31 30.2	2 06.0	119 18.0	7 57.2	+1.22825	+1.28208	+ 7.24	+ 0.8599	
	27	0.6535	2.221	0.006	31 30.3	2 06.0	118 17.2	7 53.1	1.22921	1.28155	7.30	0.8636	
	28	0.6562	2.227	0.005	31 28.8	2 05.9	117 16.2	7 49.1	1.23043	1.28103	7.36	0.8671	
	29	0.6589	2.233	- 0.002	31 24.9	2 05.7	116 15.0	7 45.0	1.23174	1.28052	7.42	0.8705	
	30	0.6617	2.238	+ 0.001	31 18.7	2 05.2	115 13.6	7 40.9	1.23300	1.28002	7.48	0.8737	
	31	0.6644	+ 2.244	+ 0.004	31 10.6	2 04.7	114 12.1	7 36.8	+1.23409	+1.27954	+ 7.53	+ 0.8768	
Sept.	1	0.6672	2.249	0.007	31 01.1	2 04.1	113 10.4	7 32.7	1.23496	1.27907	7.58	0.8798	
	2	0.6699	2.255	0.009	30 51.2	2 03.4	112 08.6	7 28.6	1.23558	1.27862	7.63	0.8826	
h	3	0.6726	2.260	0.009	30 41.3	2 02.8	111 06.6	7 24.4	1.23596	1.27819	7.68	0.8853	
(23.0)	4	0.6754	2.265	0.009	30 32.2	2 02.1	110 04.5	7 20.3	1.23614	1.27777	7.72	0.8878	
	5	0.6781	+ 2.271	+ 0.006	30 24.3	2 01.6	109 02.2	7 16.1	+1.23611	+1.27737	+ 7.77	+ 0.8902	
	6	0.6808	2.276	+ 0.003	30 18.3	2 01.2	107 59.8	7 12.0	1.23598	1.27699	7.81	0.8924	
	7	0.6836	2.281	- 0.002	30 14.7	2 01.0	106 57.2	7 07.8	1.23584	1.27663	7.85	0.8946	
	8	0.6863	2.286	0.007	30 13.5	2 00.9	105 54.5	7 03.6	1.23579	1.27628	7.88	0.8966	
	9	0.6891	2.291	0.011	30 14.3	2 01.0	104 51.7	6 59.4	1.23600	1.27596	7.92	0.8984	
	10	0.6918	+ 2.296	- 0.014	30 16.4	2 01.1	103 48.7	6 55.2	+1.23656	+1.27565	+ 7.95	+ 0.9002	
	11	0.6945	2.301	0.014	30 18.3	2 01.2	102 45.6	6 51.0	1.23754	1.27537	7.98	0.9018	
	12	0.6973	2.306	0.012	30 18.3	2 01.2	101 42.4	6 46.8	1.23888	1.27510	8.00	0.9032	
	13	0.7000	2.311	0.008	30 15.5	2 01.0	100 39.1	6 42.6	1.24042	1.27486	8.03	0.9046	
	14	0.7027	2.316	- 0.002	30 09.0	2 00.6	99 35.7	6 38.4	1.24196	1.27464	8.05	0.9058	
	15	0.7055	+ 2.321	+ 0.004	29 59.3	2 00.0	98 32.2	6 34.1	+1.24329	+1.27444	+ 8.07	+ 0.9068	
	16	0.7082	2.326	0.008	29 47.8	1 59.2	97 28.5	6 29.9	1.24422	1.27427	8.09	0.9078	
	17	0.7110	2.331	0.011	29 36.4	1 58.4	96 24.8	6 25.7	1.24470	1.27411	8.10	0.9086	
	18	0.7137	2.335	0.010	29 27.0	1 57.8	95 21.1	6 21.4	1.24482	1.27398	8.12	0.9093	
h	19	0.7164	2.340	0.007	29 20.9	1 57.3	94 17.2	6 17.1	1.24473	1.27388	8.13	0.9099	
(0.0)	20	0.7192	+ 2.345	+ 0.003	29 18.7	1 57.2	93 13.3	6 12.9	+1.24465	+1.27379	+ 8.14	+ 0.9104	
	21	0.7219	2.350	- 0.002	29 19.8	1 57.3	92 09.3	6 08.6	1.24478	1.27373	8.14	0.9107	
	22	0.7246	2.354	0.005	29 22.9	1 57.5	91 05.3	6 04.4	1.24526	1.27370	8.14	0.9109	
	23	0.7274	2.359	0.007	29 26.4	1 57.8	90 01.2	6 00.1	1.24612	1.27368	8.15	0.9109	
	24	0.7301	2.364	0.006	29 28.9	1 57.9	88 57.1	5 55.8	1.24728	1.27370	8.15	0.9109	
	25	0.7329	+ 2.369	- 0.004	29 29.4	1 58.0	87 53.0	5 51.5	+1.24863	+1.27373	+ 8.14	+ 0.9107	
	26	0.7356	2.373	0.000	29 27.4	1 57.8	86 48.8	5 47.3	1.24999	1.27379	8.14	0.9104	
	27	0.7383	2.378	+ 0.003	29 23.4	1 57.6	85 44.7	5 43.0	1.25122	1.27387	8.13	0.9099	
	28	0.7411	2.383	0.007	29 17.9	1 57.2	84 40.5	5 38.7	1.25227	1.27398	8.12	0.9094	
	29	0.7438	2.388	0.009	29 11.6	1 56.8	83 36.4	5 34.4	1.25309	1.27411	8.10	0.9086	
	30	0.7466	+ 2.393	+ 0.010	29 05.1	1 56.3	82 32.2	5 30.1	+1.25368	+1.27426	+ 8.09	+ 0.9078	
Oct.	1	0.7493	+ 2.397	+ 0.009	28 59.3	1 56.0	81 28.1	5 25.9	+1.25405	+1.27444	+ 8.07	+ 0.9069	

FOR WASHINGTON MEAN MIDNIGHT.

Solar Day. (Sid. Hour.)		T	f		f'		G		H		Log g.	Log h.	i	Log i.	
			In Time.	In Time.	In Arc.	In Time.	In Arc.	In Time.							
Oct.	h (1.0)	y	s	s	°	h	m	h	m	h	m				
		1	0.7493	+ 2.397	+ 0.009	28 59.3	1 56.0	81 28.1	5 25.9	+1.25405	+1.27444	+ 8.07	+ 0.9069		
		2	0.7520	2.402	0.007	28 54.3	1 55.6	80 24.0	5 21.6	1.25426	1.27464	8.05	0.9058		
		3	0.7548	2.407	+ 0.004	28 50.9	1 55.4	79 19.9	5 17.3	1.25432	1.27487	8.03	0.9045		
		4	0.7575	2.412	0.000	28 49.5	1 55.3	78 15.9	5 13.1	1.25438	1.27511	8.00	0.9032		
		5	0.7602	2.417	- 0.005	28 50.4	1 55.4	77 11.9	5 08.8	1.25447	1.27538	7.97	0.9017		
		6	0.7630	+ 2.422	- 0.009	28 53.6	1 55.6	76 07.9	5 04.5	+1.25477	+1.27567	+ 7.94	+ 0.9001		
		7	0.7657	2.427	0.013	28 58.0	1 55.9	75 04.0	5 00.3	1.25541	1.27598	7.91	0.8983		
		8	0.7685	2.432	0.014	29 02.8	1 56.2	74 00.2	4 56.0	1.25643	1.27631	7.88	0.8964		
		9	0.7712	2.437	0.013	29 06.4	1 56.4	72 56.4	4 51.8	1.25784	1.27666	7.84	0.8944		
		10	0.7739	2.442	0.009	29 07.6	1 56.5	71 52.7	4 47.5	1.25950	1.27704	7.80	0.8922		
	11	0.7767	+ 2.448	- 0.004	29 05.4	1 56.4	70 49.0	4 43.3	+1.26125	+1.27743	+ 7.76	+ 0.8899			
	12	0.7794	2.453	+ 0.002	29 00.0	1 56.0	69 45.4	4 39.0	1.26285	1.27784	7.72	0.8874			
	13	0.7821	2.458	0.007	28 52.2	1 55.5	68 42.0	4 34.8	1.26415	1.27827	7.67	0.8848			
	14	0.7849	2.464	0.010	28 43.8	1 54.9	67 38.5	4 30.6	1.26503	1.27872	7.62	0.8820			
	15	0.7876	2.469	0.011	28 36.4	1 54.4	66 35.2	4 26.3	1.26550	1.27918	7.57	0.8791			
	16	0.7904	+ 2.475	+ 0.008	28 31.7	1 54.1	65 32.0	4 22.1	+1.26573	+1.27966	+ 7.52	+ 0.8760			
	17	0.7931	2.480	+ 0.004	28 30.6	1 54.0	64 28.9	4 17.9	1.26589	1.28016	7.46	0.8728			
	18	0.7958	2.486	- 0.001	28 32.9	1 54.2	63 25.9	4 13.7	1.26621	1.28067	7.40	0.8694			
	19	0.7986	2.492	0.005	28 37.5	1 54.5	62 23.0	4 09.5	1.26682	1.28120	7.34	0.8659			
	20	0.8013	2.498	0.007	28 43.0	1 54.9	61 20.2	4 05.3	1.26783	1.28174	7.28	0.8622			
	21	0.8040	+ 2.503	- 0.007	28 47.8	1 55.2	60 17.6	4 01.2	+1.26916	+1.28230	+ 7.22	+ 0.8583			
	22	0.8068	2.509	0.005	28 50.8	1 55.4	59 15.0	3 57.0	1.27074	1.28286	7.15	0.8543			
	23	0.8095	2.515	- 0.002	28 51.4	1 55.4	58 12.7	3 52.8	1.27237	1.28344	7.08	0.8501			
	24	0.8123	2.522	+ 0.002	28 49.8	1 55.3	57 10.4	3 48.7	1.27399	1.28403	7.01	0.8457			
	25	0.8150	2.528	0.005	28 46.4	1 55.1	56 08.3	3 44.6	1.27541	1.28463	6.94	0.8412			
	26	0.8177	+ 2.534	+ 0.008	28 41.9	1 54.8	55 06.3	3 40.4	+1.27663	+1.28524	+ 6.86	+ 0.8364			
	27	0.8205	2.540	0.009	28 37.0	1 54.5	54 04.5	3 36.3	1.27762	1.28586	6.78	0.8315			
	28	0.8232	2.547	0.009	28 32.4	1 54.2	53 02.8	3 32.2	1.27840	1.28648	6.70	0.8263			
	29	0.8260	2.554	0.008	28 28.5	1 53.9	52 01.3	3 28.1	1.27900	1.28711	6.62	0.8210			
	30	0.8287	2.560	0.005	28 25.9	1 53.7	50 59.9	3 24.0	1.27945	1.28775	6.54	0.8155			
31	0.8314	+ 2.567	+ 0.001	28 24.9	1 53.7	49 58.7	3 19.9	+1.27986	+1.28839	+ 6.45	+ 0.8098				
Nov.	h (3.0)	1	0.8342	2.574	- 0.004	28 25.8	1 53.7	48 57.6	3 15.8	1.28032	1.28904	6.36	0.8038		
		2	0.8369	2.581	0.008	28 28.7	1 53.9	47 56.7	3 11.8	1.28091	1.28969	6.27	0.7976		
		3	0.8396	2.588	0.012	28 33.1	1 54.2	46 55.9	3 07.7	1.28179	1.29034	6.18	0.7912		
		4	0.8424	2.595	- 0.014	28 38.0	1 54.5	45 55.3	3 03.7	1.28301	1.29100	6.09	0.7846		
		5	0.8451	+ 2.602	- 0.013	28 42.2	1 54.8	44 54.9	2 59.7	+1.28461	+1.29165	+ 5.99	+ 0.7777		
		6	0.8479	2.609	0.010	28 44.2	1 54.9	43 54.6	2 55.6	1.28650	1.29231	5.90	0.7706		
		7	0.8506	2.617	- 0.005	28 43.5	1 54.9	42 54.4	2 51.6	1.28854	1.29296	5.80	0.7632		
		8	0.8533	2.624	+ 0.001	28 39.4	1 54.6	41 54.4	2 47.6	1.29052	1.29362	5.70	0.7556		
		9	0.8561	2.632	0.007	28 32.6	1 54.2	40 54.5	2 43.6	1.29222	1.29427	5.59	0.7477		
		10	0.8588	+ 2.640	+ 0.011	28 24.6	1 53.6	39 54.8	2 39.7	+1.29356	+1.29492	+ 5.49	+ 0.7395		
	11	0.8615	2.648	0.012	28 17.0	1 53.1	38 55.3	2 35.7	1.29451	1.29556	5.38	0.7309			
	12	0.8643	2.656	0.010	28 11.4	1 52.8	37 55.8	2 31.7	1.29516	1.29620	5.27	0.7221			
	13	0.8670	2.664	0.006	28 08.7	1 52.6	36 56.6	2 27.8	1.29564	1.29684	5.16	0.7130			
	14	0.8698	2.672	+ 0.001	28 09.3	1 52.6	35 57.4	2 23.8	1.29618	1.29747	5.05	0.7035			
	15	0.8725	+ 2.680	- 0.004	28 12.4	1 52.8	34 58.4	2 19.9	+1.29698	+1.29810	+ 4.94	+ 0.6936			
	16	0.8752	+ 2.688	- 0.007	28 16.7	1 53.1	33 59.5	2 16.0	+1.29809	+1.29871	+ 4.82	+ 0.6834			

INDEPENDENT STAR-NUMBERS, 1903.

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(CONSTANTS OF PARIS CONFERENCE.)

FOR WASHINGTON MEAN MIDNIGHT.

Solar Day. (Sid. Hour.)		τ	f	f'	G		H		Log g .	Log h .	i	Log i .
			In Time.	In Time.	In Arc.	In Time.	In Arc.	In Time.				
		y	s	s	°	h m	°	h m			"	
Nov.	16	0.8752	+ 2.688	- 0.007	28 16.7	1 53.1	33 59.5	2 16.0	+1.29809	+1.29871	+ 4.82	+ 0.6834
	17	0.8780	2.697	0.008	28 20.9	1 53.4	33 00.8	2 12.1	1.29958	1.29932	4.71	0.6728
	h 18	0.8807	2.705	0.007	28 23.5	1 53.6	32 02.2	2 08.2	1.30131	1.29992	4.59	0.6618
	(4.0) 19	0.8834	2.714	- 0.004	28 23.9	1 53.7	31 03.8	2 04.3	1.30317	1.30051	4.47	0.6504
	20	0.8862	2.722	0.000	28 21.8	1 53.5	30 05.5	2 00.4	1.30501	1.30108	4.35	0.6385
	21	0.8889	+ 2.731	+ 0.004	28 17.8	1 53.2	29 07.3	1 56.5	+1.30675	+1.30165	+ 4.23	+ 0.6261
	22	0.8917	2.740	0.007	28 12.5	1 52.8	28 09.2	1 52.6	1.30826	1.30221	4.10	0.6132
	23	0.8944	2.749	0.009	28 06.6	1 52.4	27 11.3	1 48.8	1.30958	1.30275	3.98	0.5998
	24	0.8971	2.758	0.009	28 00.7	1 52.0	26 13.5	1 44.9	1.31065	1.30328	3.85	0.5859
	25	0.8999	2.767	0.008	27 55.2	1 51.7	25 15.8	1 41.1	1.31154	1.30380	3.73	0.5713
	26	0.9026	+ 2.776	+ 0.006	27 50.8	1 51.4	24 18.2	1 37.2	+1.31229	+1.30431	+ 3.60	+ 0.5560
	27	0.9054	2.785	+ 0.002	27 47.6	1 51.2	23 20.8	1 33.4	1.31295	1.30480	3.47	0.5401
	28	0.9081	2.795	- 0.003	27 46.1	1 51.1	22 23.5	1 29.6	1.31361	1.30527	3.34	0.5234
	29	0.9108	2.804	0.007	27 46.3	1 51.1	21 26.2	1 25.7	1.31435	1.30573	3.20	0.5058
	30	0.9136	2.814	0.011	27 47.9	1 51.2	20 29.1	1 21.9	1.31529	1.30617	3.07	0.4874
Dec.	1	0.9163	+ 2.823	- 0.014	27 50.5	1 51.4	19 32.1	1 18.1	+1.31655	+1.30660	+ 2.94	+ 0.4681
	2	0.9190	2.833	0.014	27 52.5	1 51.5	18 35.2	1 14.3	1.31814	1.30701	2.80	0.4477
	3	0.9218	2.843	0.012	27 53.1	1 51.5	17 38.3	1 10.6	1.32003	1.30740	2.67	0.4261
	h 4	0.9245	2.852	0.007	27 51.2	1 51.4	16 41.5	1 06.8	1.32210	1.30777	2.53	0.4033
	(5.0) 5	0.9273	2.862	- 0.001	27 46.2	1 51.1	15 44.9	1 03.0	1.32420	1.30813	2.39	0.3790
	6	0.9300	+ 2.872	+ 0.005	27 38.5	1 50.6	14 48.3	0 59.2	+1.32611	+1.30847	+ 2.26	+ 0.3531
	7	0.9327	2.882	0.010	27 28.9	1 49.9	13 51.8	0 55.5	1.32771	1.30879	2.12	0.3255
	8	0.9355	2.892	0.012	27 19.0	1 49.3	12 55.3	0 51.7	1.32891	1.30909	1.98	0.2958
	9	0.9382	2.902	0.012	27 10.5	1 48.7	11 58.8	0 47.9	1.32977	1.30937	1.84	0.2638
	10	0.9409	2.912	0.009	27 04.4	1 48.3	11 02.5	0 44.2	1.33039	1.30963	1.70	0.2291
	11	0.9437	+ 2.922	+ 0.004	27 01.4	1 48.1	10 06.2	0 40.4	+1.33099	+1.30987	+ 1.55	+ 0.1912
	12	0.9464	2.932	- 0.001	27 01.1	1 48.1	9 09.9	0 36.7	1.33173	1.31009	1.41	0.1495
	13	0.9492	2.942	0.005	27 02.3	1 48.2	8 13.6	0 32.9	1.33275	1.31028	1.27	0.1032
	14	0.9519	2.953	0.007	27 03.9	1 48.3	7 17.4	0 29.2	1.33406	1.31046	1.13	0.0512
	15	0.9546	2.963	0.007	27 04.6	1 48.3	6 21.2	0 25.4	1.33566	1.31062	0.98	0.0019
	16	0.9574	+ 2.973	- 0.004	27 03.2	1 48.2	5 25.1	0 21.7	+1.33740	+1.31076	+ 0.84	+ 0.9231
	17	0.9601	2.983	- 0.001	26 59.5	1 48.0	4 29.0	0 17.9	1.33919	1.31087	0.69	0.8411
	18	0.9628	2.994	+ 0.003	26 53.9	1 47.6	3 32.8	0 14.2	1.34087	1.31096	0.55	0.7397
	h 19	0.9656	3.004	0.006	26 46.7	1 47.1	2 36.7	0 10.4	1.34240	1.31103	0.41	0.6070
	(6.0) 20	0.9683	3.014	0.008	26 38.8	1 46.6	1 40.7	0 06.7	1.34379	1.31108	0.26	0.4148
	21	0.9711	+ 3.025	+ 0.009	26 30.6	1 46.0	0 44.6	0 03.0	+1.34479	+1.31111	+ 0.11	+ 0.0610
	22	0.9738	3 035	0.009	26 22.7	1 45.5	359 48.5	23 59.2	1.34568	1.31112	- 0.03	- 8.4738
	23	0.9765	3.045	0.007	26 15.6	1 45.0	358 52.4	23 55.5	1.34641	1.31110	0.17	9.2421
	24	0.9793	3.056	+ 0.003	26 09.7	1 44.6	357 56.3	23 51.8	1.34702	1.31107	0.32	9.5044
	25	0.9820	3.066	- 0.001	26 05.1	1 44.3	357 00.1	23 48.0	1.34758	1.31101	0.46	9.6667
	26	0.9848	+ 3.076	- 0.006	26 02.2	1 44.2	356 04.0	23 44.3	+1.34817	+1.31093	- 0.61	- 9.7844
	27	0.9875	3.087	0.011	26 00.8	1 44.1	355 07.9	23 40.5	1.34889	1.31083	0.75	9.8768
	28	0.9902	3.097	0.014	26 00.3	1 44.0	354 11.7	23 36.8	1.34986	1.31070	0.90	9.9529
	29	0.9930	3.107	0.015	26 00.1	1 44.0	353 15.5	23 33.0	1.35111	1.31056	1.04	0.0175
	30	0.9957	3.117	0.014	25 59.0	1 43.9	352 19.2	23 29.3	1.35267	1.31039	1.18	0.0736
	31	0.9984	+ 3.128	- 0.010	25 55.8	1 43.7	351 22.9	23 25.5	+1.35444	+1.31020	- 1.33	- 0.1231
	32	1.0012	+ 3.138	- 0.004	25 49.9	1 43.3	350 26.5	23 21.8	+1.35631	+1.31000	- 1.47	- 0.1674

CIRCUMPOLAR STARS.

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Ursæ Min. (Polaris).		Mean Solar Date.	51 Cephei (Hæv.).		Mean Solar Date.	δ Ursæ Min.		Mean Solar Date.	λ Ursæ Min.		Mean Solar Date.	σ Octantis.	
	Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion South.
Jan.	h m 1 24	° +88 47	Jan.	h m 6 55	° +87 11	Jan.	h m 18 03	° +86 36	Jan.	h m 19 17	° +88 59	Jan.	h m 19 03	° -89 14
0.3	34.38	42.1	0.5	41.62	54.8	0.9	8.90	55.1	1.0	50.71	49.9	1.0	6.65	53.1
1.3	33.30	42.2	1.5	41.75	55.2	1.9	8.92	54.7	2.0	50.29	49.5	2.0	6.86	52.8
2.3	32.18	42.3	2.5	41.85	55.5	2.9	8.97	54.3	3.0	49.97	49.1	3.0	7.04	52.5
3.3	31.08	42.3	3.5	41.93	55.9	3.9	9.03	54.0	4.0	49.72	48.8	4.0	7.19	52.2
4.3	30.03	42.4	4.5	41.97	56.2	4.9	9.10	53.6	5.0	49.52	48.4	5.0	7.33	51.8
5.3	29.02	42.5	5.5	42.01	56.5	5.9	9.18	53.3	6.0	49.35	48.1	5.9	7.49	51.5
6.3	28.07	42.5	6.5	42.06	56.8	6.9	9.24	53.0	7.0	49.16	47.8	6.9	7.72	51.1
7.3	27.17	42.6	7.5	42.10	57.1	7.9	9.29	52.7	8.0	48.96	47.5	7.9	8.07	50.8
8.3	26.28	42.6	8.5	42.16	57.4	8.9	9.34	52.4	8.9	48.72	47.2	8.9	8.53	50.4
9.3	25.41	42.7	9.5	42.22	57.7	9.9	9.36	52.1	9.9	48.43	47.0	9.9	9.10	50.0
10.2	24.51	42.8	10.5	42.30	58.0	10.9	9.38	51.8	10.9	48.11	46.7	10.9	9.77	49.6
11.2	23.58	42.9	11.5	42.38	58.3	11.9	9.42	51.5	11.9	47.79	46.4	11.9	10.52	49.3
12.2	22.59	43.0	12.5	42.46	58.6	12.9	9.47	51.1	12.9	47.50	46.0	12.9	11.31	49.0
13.2	21.53	43.1	13.5	42.52	58.9	13.9	9.53	50.8	13.9	47.27	45.7	13.9	12.08	48.6
14.2	20.43	43.1	14.5	42.55	59.3	14.9	9.62	50.4	14.9	47.11	45.3	14.9	12.79	48.3
15.2	19.29	43.2	15.5	42.57	59.6	15.9	9.74	50.1	15.9	47.04	44.9	15.9	13.45	48.1
16.2	18.14	43.2	16.5	42.54	60.0	16.9	9.88	49.7	16.9	47.06	44.6	16.9	14.05	47.8
17.2	17.02	43.2	17.5	42.48	60.4	17.9	10.04	49.4	17.9	47.16	44.2	17.9	14.62	47.5
18.2	15.93	43.2	18.5	42.41	60.7	18.9	10.21	49.1	18.9	47.31	43.9	18.9	15.17	47.1
19.2	14.91	43.1	19.5	42.33	61.0	19.9	10.37	48.8	19.9	47.49	43.6	19.9	15.76	46.8
20.2	13.93	43.1	20.4	42.23	61.3	20.9	10.53	48.5	20.9	47.67	43.3	20.9	16.41	46.4
21.2	12.99	43.1	21.4	42.15	61.6	21.9	10.68	48.2	21.9	47.83	43.0	21.9	17.17	46.1
22.2	12.09	43.0	22.4	42.06	61.8	22.9	10.82	48.0	22.9	47.95	42.7	22.9	18.03	45.7
23.2	11.19	43.0	23.4	42.00	62.1	23.9	10.96	47.7	23.9	48.04	42.4	23.9	19.00	45.4
24.2	10.25	43.0	24.4	41.94	62.4	24.9	11.10	47.4	24.9	48.10	42.1	24.9	20.05	45.0
25.2	9.28	43.0	25.4	41.89	62.7	25.9	11.24	47.1	25.9	48.16	41.8	25.9	21.15	44.7
26.2	8.26	43.0	26.4	41.83	63.0	26.9	11.40	46.8	26.9	48.27	41.4	26.9	22.27	44.4
27.2	7.19	43.0	27.4	41.75	63.4	27.9	11.58	46.4	27.9	48.43	41.1	27.9	23.37	44.1
28.2	6.08	42.9	28.4	41.65	63.7	28.9	11.78	46.1	28.9	48.67	40.7	28.9	24.41	43.9
29.2	4.94	42.9	29.4	41.51	64.0	29.9	12.00	45.8	29.9	48.98	40.4	29.9	25.41	43.6
30.2	3.81	42.8	30.4	41.34	64.4	30.9	12.24	45.5	30.9	49.39	40.0	30.9	26.36	43.3
31.2	2.72	42.7	31.4	41.15	64.7	31.9	12.51	45.2	31.9	49.85	39.7	31.9	27.29	43.0
32.2	1.67	42.6	32.4	40.94	65.0	32.9	12.77	45.0	32.9	50.35	39.4	32.9	28.22	42.7

CIRCUMPOLAR STARS.

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

α Ursæ Min (Polaris).			51 Cephei (Hæv.).			δ Ursæ Min.			λ Ursæ Min.			σ Octantis.		
Mean Solar Date.	Right Ascension.	Declina- tion North.	Mean Solar Date.	Right Ascension.	Declina- tion North.	Mean Solar Date.	Right Ascension.	Declina- tion North.	Mean Solar Date.	Right Ascension.	Declina- tion North.	Mean Solar Date.	Right Ascension.	Declina- tion South.
Feb.	h m	°	Feb.	h m	°	Feb.	h m	°	Feb.	h m	°	Feb.	h m	°
	1 23	+88 47		6 55	+87 12		18 03	+86 36		19 17	+88 59		19 03	-89 14
	s	"		s	"		s	"		s	"		s	"
1.2	61.67	42.6	1.4	40.94	5.0	1.9	12.77	45.0	1.9	50.35	39.4	1.9	28.22	42.7
2.2	60.70	42.5	2.4	40.75	5.3	2.9	13.02	44.7	2.9	50.84	39.1	2.9	29.20	42.4
3.2	59.79	42.3	3.4	40.54	5.5	3.9	13.26	44.5	3.9	51.34	38.8	3.9	30.27	42.1
4.2	58.94	42.2	4.4	40.34	5.8	4.9	13.48	44.3	4.9	51.79	38.5	4.9	31.45	41.7
5.2	58.10	42.1	5.4	40.17	6.0	5.9	13.70	44.0	5.9	52.19	38.3	5.9	32.74	41.4
6.2	57.27	42.0	6.4	40.00	6.3	6.9	13.91	43.8	6.9	52.55	38.0	6.9	34.14	41.1
7.2	56.40	41.9	7.4	39.83	6.5	7.9	14.12	43.6	7.9	52.90	37.7	7.9	35.60	40.8
8.2	55.50	41.8	8.4	39.69	6.8	8.9	14.33	43.3	8.9	53.26	37.4	8.9	37.10	40.5
9.2	54.55	41.7	9.4	39.52	7.1	9.9	14.56	43.1	9.9	53.66	37.1	9.9	38.61	40.3
10.2	53.54	41.6	10.4	39.33	7.4	10.9	14.81	42.8	10.9	54.13	36.8	10.9	40.08	40.0
11.2	52.52	41.5	11.4	39.11	7.7	11.9	15.09	42.5	11.9	54.68	36.4	11.9	41.47	39.8
12.2	51.48	41.4	12.4	38.86	8.0	12.9	15.38	42.3	12.9	55.32	36.1	12.9	42.80	39.6
13.2	50.47	41.2	13.4	38.58	8.3	13.9	15.70	42.0	13.9	56.04	35.8	13.9	44.07	39.3
14.2	49.50	41.0	14.4	38.29	8.6	14.9	16.03	41.8	14.9	56.81	35.5	14.9	45.30	39.1
15.1	48.60	40.8	15.4	37.98	8.8	15.9	16.37	41.6	15.9	57.62	35.3	15.9	46.55	38.8
16.1	47.77	40.6	16.4	37.65	9.1	16.8	16.68	41.5	16.9	58.44	35.0	16.9	47.83	38.5
17.1	47.00	40.4	17.4	37.34	9.3	17.8	16.99	41.3	17.9	59.23	34.8	17.9	49.19	38.3
18.1	46.26	40.2	18.4	37.04	9.5	18.8	17.29	41.2	18.9	59.99	34.6	18.9	50.66	38.0
19.1	45.55	40.0	19.4	36.75	9.7	19.8	17.58	41.0	19.9	60.72	34.3	19.9	52.21	37.7
20.1	44.82	39.8	20.4	36.49	9.9	20.8	17.86	40.8	20.9	61.41	34.1	20.9	53.87	37.5
21.1	44.08	39.7	21.4	36.22	10.1	21.8	18.15	40.7	21.9	62.10	33.9	21.9	55.57	37.2
22.1	43.30	39.5	22.4	35.96	10.3	22.8	18.44	40.5	22.9	62.79	33.6	22.9	57.29	37.0
23.1	42.47	39.3	23.4	35.67	10.6	23.8	18.74	40.3	23.9	63.53	33.4	23.9	58.99	36.8
24.1	41.61	39.1	24.3	35.37	10.8	24.8	19.07	40.1	24.9	64.32	33.1	24.9	60.64	36.6
25.1	40.71	38.9	25.3	35.04	11.0	25.8	19.42	39.9	25.9	65.20	32.8	25.9	62.23	36.5
26.1	39.83	38.7	26.3	34.68	11.3	26.8	19.78	39.7	26.9	66.15	32.5	26.9	63.75	36.3
27.1	38.99	38.4	27.3	34.30	11.5	27.8	20.16	39.6	27.9	67.15	32.3	27.8	65.24	36.1
28.1	38.21	38.2	28.3	33.89	11.7	28.8	20.54	39.4	28.9	68.20	32.1	28.8	66.71	35.9
29.1	37.49	37.9	29.3	33.49	11.9	29.8	20.93	39.3	29.9	69.26	31.9	29.8	68.20	35.7

CIRCUMPOLAR STARS.

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Ursæ Min. (Polaris).		Mean Solar Date.	γ Cephei (Hev.).		Mean Solar Date.	δ Ursæ Min.		Mean Solar Date.	λ Ursæ Min.		Mean Solar Date.	ϵ Octantis	
	Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion South.
Mar.	h m ° ' "		Mar.	h m ° ' "		Mar.	h m ° ' "		Mar.	h m ° ' "		Mar.	h m ° ' "	
	1 23	+88 47		6 55	+87 12		18 03	+86 36		19 18	+88 59		19 04	-89 14
	s	"		s	"		s	"		s	"		s	"
1.1	37.49	37.9	1.3	33.49	11.9	1.8	20.93	39.3	1.9	9.26	31.9	1.8	8.20	35.7
2.1	36.86	37.6	2.3	33.10	12.1	2.8	21.30	39.2	2.9	10.32	31.7	2.8	9.75	35.5
3.1	36.29	37.3	3.3	32.71	12.2	3.8	21.64	39.2	3.9	11.32	31.5	3.8	11.40	35.2
4.1	35.77	37.1	4.3	32.33	12.3	4.8	21.97	39.1	4.9	12.28	31.3	4.8	13.15	35.0
5.1	35.26	36.8	5.3	31.99	12.5	5.8	22.28	39.0	5.8	13.18	31.2	5.8	14.08	34.8
6.1	34.74	36.6	6.3	31.66	12.6	6.8	22.59	38.9	6.8	14.04	31.0	6.8	16.90	34.6
7.1	34.20	36.4	7.3	31.33	12.8	7.8	22.90	38.8	7.8	14.89	30.8	7.8	18.86	34.4
8.1	33.62	36.2	8.3	31.00	12.9	8.8	23.22	38.7	8.8	15.77	30.7	8.8	20.82	34.3
9.1	33.00	35.9	9.3	30.66	13.1	9.8	23.56	38.6	9.8	16.69	30.5	9.8	22.75	34.1
10.1	32.35	35.7	10.3	30.30	13.3	10.8	23.91	38.5	10.8	17.68	30.3	10.8	24.60	34.0
11.1	31.68	35.4	11.3	29.92	13.4	11.8	24.29	38.4	11.8	18.73	30.1	11.8	26.37	33.9
12.1	31.03	35.1	12.3	29.50	13.6	12.8	24.68	38.3	12.8	19.88	29.9	12.8	28.09	33.8
13.1	30.44	34.8	13.3	29.07	13.7	13.8	25.07	38.2	13.8	21.09	29.7	13.8	29.76	33.6
14.1	29.90	34.5	14.3	28.62	13.9	14.8	25.47	38.2	14.8	22.33	29.5	14.8	31.38	33.5
15.1	29.43	34.2	15.3	28.16	14.0	15.8	25.87	38.2	15.8	23.57	29.4	15.8	33.03	33.4
16.1	29.04	33.9	16.3	27.70	14.1	16.8	26.26	38.2	16.8	24.79	29.3	16.8	34.73	33.2
17.1	28.71	33.6	17.3	27.26	14.1	17.8	26.63	38.2	17.8	25.96	29.2	17.8	36.51	33.0
18.1	28.42	33.3	18.3	26.84	14.2	18.8	26.98	38.2	18.8	27.09	29.1	18.8	38.37	32.9
19.1	28.14	33.0	19.3	26.44	14.2	19.8	27.32	38.2	19.8	28.16	29.0	19.8	40.33	32.7
20.1	27.83	32.7	20.3	26.05	14.3	20.8	27.65	38.2	20.8	29.20	28.9	20.8	42.33	32.6
21.1	27.51	32.4	21.3	25.67	14.4	21.8	27.99	38.2	21.8	30.24	28.8	21.8	44.35	32.5
22.0	27.15	32.2	22.3	25.29	14.5	22.7	28.34	38.2	22.8	31.32	28.7	22.8	46.36	32.4
23.0	26.75	31.9	23.3	24.90	14.5	23.7	28.71	38.2	23.8	32.43	28.6	23.8	48.31	32.3
24.0	26.33	31.6	24.3	24.48	14.6	24.7	29.09	38.1	24.8	33.60	28.5	24.8	50.19	32.3
25.0	25.92	31.3	25.3	24.03	14.7	25.7	29.48	38.1	25.8	34.83	28.4	25.8	52.00	32.2
26.0	25.52	31.0	26.3	23.58	14.8	26.7	29.88	38.1	26.8	36.13	28.3	26.8	53.76	32.2
27.0	25.19	30.6	27.3	23.10	14.9	27.7	30.28	38.2	27.8	37.46	28.2	27.8	55.47	32.1
28.0	24.94	30.3	28.3	22.61	15.0	28.7	30.69	38.2	28.8	38.80	28.1	28.8	57.17	32.0
29.0	24.75	29.9	29.3	22.14	14.9	29.7	31.08	38.3	29.8	40.11	28.0	29.8	58.90	31.9
30.0	24.64	29.6	30.3	21.68	14.9	30.7	31.45	38.4	30.8	41.38	28.0	30.8	60.71	31.8
31.0	24.60	29.3	31.3	21.23	14.9	31.7	31.80	38.5	31.8	42.61	28.0	31.8	62.61	31.7
32.0	24.57	28.9	32.2	20.81	14.9	32.7	32.13	38.6	32.8	43.76	28.0	32.8	64.59	31.6

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON

Mean Solar Date.	α Ursæ Min. (Polaris).		Mean Solar Date.	γ Cephei (H ϵ v.)		Mean Solar Date.	δ Ursæ Min.		Mean Solar Date.	λ Ursæ Min.		Mean Solar Date.	σ Octantis.	
	Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion South.
Apr.	h m 1 23	° +88 47	Apr.	h m 6 55	° +87 12	Apr.	h m 18 03	° +86 36	Apr.	h m 19 18	° +88 59	Apr.	h m 19 05	° -89 14
	s "	"		s "	"		s "	"		s "	"		s "	"
1.0	24.57	28.9	1.2	20.81	14.9	1.7	32.13	38.6	1.8	43.76	28.0	1.8	4.59	31.6
2.0	24.56	28.7	2.2	20.40	14.8	2.7	32.44	38.7	2.8	44.85	28.0	2.8	6.66	31.6
3.0	24.53	28.4	3.2	20.01	14.8	3.7	32.74	38.8	3.8	45.90	28.0	3.8	8.77	31.5
4.0	24.48	28.1	4.2	19.65	14.8	4.7	33.05	38.9	4.8	46.95	28.0	4.8	10.89	31.5
5.0	24.37	27.8	5.2	19.27	14.8	5.7	33.37	38.9	5.8	48.04	28.0	5.7	12.98	31.5
6.0	24.25	27.5	6.2	18.87	14.8	6.7	33.71	39.0	6.8	49.17	27.9	6.7	15.00	31.5
7.0	24.12	27.2	7.2	18.46	14.8	7.7	34.06	39.0	7.8	50.35	27.9	7.7	16.93	31.5
8.0	23.98	26.9	8.2	18.03	14.8	8.7	34.43	39.1	8.8	51.60	27.9	8.7	18.78	31.5
9.0	23.88	26.6	9.2	17.56	14.8	9.7	34.81	39.2	9.8	52.91	27.9	9.7	20.55	31.5
10.0	23.84	26.2	10.2	17.09	14.8	10.7	35.19	39.3	10.8	54.24	27.9	10.7	22.28	31.5
11.0	23.86	25.9	11.2	16.63	14.7	11.7	35.56	39.5	11.7	55.59	27.9	11.7	23.98	31.5
12.0	23.97	25.5	12.2	16.16	14.7	12.7	35.91	39.7	12.7	56.91	27.9	12.7	25.72	31.4
13.0	24.15	25.2	13.2	15.71	14.6	13.7	36.25	39.8	13.7	58.18	28.0	13.7	27.51	31.4
13.9	24.36	24.9	14.2	15.28	14.5	14.7	36.58	40.0	14.7	59.39	28.1	14.7	29.38	31.4
14.9	24.61	24.6	15.2	14.88	14.3	15.7	36.88	40.2	15.7	60.55	28.2	15.7	31.33	31.4
15.9	24.84	24.3	16.2	14.50	14.2	16.7	37.17	40.4	16.7	61.65	28.3	16.7	33.34	31.4
16.9	25.07	24.0	17.2	14.13	14.1	17.7	37.45	40.5	17.7	62.71	28.3	17.7	35.36	31.4
17.9	25.25	23.7	18.2	13.76	14.1	18.7	37.72	40.7	18.7	63.78	28.4	18.7	37.37	31.4
18.9	25.38	23.4	19.2	13.38	14.0	19.7	38.02	40.8	19.7	64.87	28.5	19.7	39.35	31.5
19.9	25.50	23.1	20.2	12.99	13.9	20.7	38.34	40.9	20.7	66.01	28.5	20.7	41.24	31.6
20.9	25.59	22.8	21.2	12.60	13.9	21.7	38.66	41.1	21.7	67.19	28.5	21.7	43.06	31.6
21.9	25.72	22.5	22.2	12.18	13.8	22.7	39.00	41.2	22.7	68.43	28.6	22.7	44.78	31.7
22.9	25.88	22.2	23.2	11.75	13.7	23.7	39.33	41.4	23.7	69.70	28.7	23.7	46.45	31.8
23.9	26.12	21.8	24.2	11.30	13.5	24.7	39.66	41.6	24.7	70.99	28.8	24.7	48.08	31.8
24.9	26.43	21.5	25.2	10.86	13.4	25.7	39.97	41.8	25.7	72.25	28.9	25.7	49.72	31.9
25.9	26.82	21.2	26.2	10.45	13.3	26.7	40.27	42.1	26.7	73.46	29.0	26.7	51.40	31.9
26.9	27.25	20.9	27.2	10.05	13.1	27.7	40.54	42.3	27.7	74.61	29.2	27.7	53.16	31.9
27.9	27.75	20.6	28.2	9.68	12.9	28.7	40.78	42.6	28.7	75.68	29.3	28.7	55.00	32.0
28.9	28.26	20.3	29.2	9.35	12.7	29.6	41.01	42.8	29.7	76.68	29.5	29.7	56.93	32.0
29.9	28.75	20.0	30.2	9.03	12.6	30.6	41.23	43.1	30.7	77.62	29.7	30.7	58.89	32.1
30.9	29.22	19.8	31.2	8.72	12.4	31.6	41.44	43.3	31.7	78.53	29.8	31.7	60.88	32.2
31.9	29.66	19.5												

CIRCUMPOLAR STARS.

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Ursæ Min. (Polaris).		Mean Solar Date.	γ Cephei (Hrv.).		Mean Solar Date.	δ Ursæ Min.		Mean Solar Date.	λ Ursæ Min.		Mean Solar Date.	σ Octantis.	
	Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion South.
May	h m 1 23	° +88 47	May	h m 6 55	° +87 12	May	h m 18 03	° +86 36	May	h m 19 19	° +88 59	May	h m 19 06	° -89 14
	s	"		s	"		s	"		s	"		s	"
1.9	29.66	19.5	1.2	8.72	12.4	1.6	41.44	43.3	1.7	18.53	29.8	1.7	0.88	32.2
2.9	30.05	19.3	2.2	8.42	12.2	2.6	41.66	43.5	2.7	19.45	29.9	2.7	2.83	32.3
3.9	30.41	19.0	3.2	8.12	12.1	3.6	41.88	43.7	3.7	20.40	30.1	3.7	4.73	32.4
4.9	30.76	18.8	4.2	7.81	12.0	4.6	42.12	43.9	4.7	21.38	30.2	4.7	6.53	32.6
5.9	31.14	18.5	5.2	7.47	11.8	5.6	42.37	44.1	5.7	22.42	30.3	5.7	8.22	32.7
6.9	31.58	18.2	6.2	7.12	11.6	6.6	42.63	44.3	6.7	23.52	30.4	6.7	9.82	32.8
7.9	32.07	17.9	7.1	6.75	11.5	7.6	42.89	44.6	7.7	24.64	30.6	7.7	11.35	33.0
8.9	32.64	17.6	8.1	6.38	11.3	8.6	43.16	44.8	8.7	25.76	30.7	8.7	12.84	33.1
9.9	33.28	17.3	9.1	6.01	11.1	9.6	43.41	45.1	9.7	26.87	30.9	9.6	14.34	33.2
10.9	33.97	17.1	10.1	5.66	10.9	10.6	43.63	45.4	10.7	27.93	31.1	10.6	15.88	33.3
11.9	34.67	16.8	11.1	5.34	10.6	11.6	43.84	45.7	11.7	28.93	31.4	11.6	17.48	33.4
12.9	35.40	16.6	12.1	5.05	10.4	12.6	44.02	46.0	12.7	29.84	31.6	12.6	19.13	33.5
13.9	36.09	16.4	13.1	4.78	10.1	13.6	44.18	46.3	13.6	30.69	31.8	13.6	20.86	33.6
14.9	36.75	16.2	14.1	4.52	9.9	14.6	44.33	46.6	14.6	31.48	32.1	14.6	22.61	33.7
15.9	37.36	15.9	15.1	4.28	9.7	15.6	44.49	46.9	15.6	32.26	32.3	15.6	24.35	33.9
16.9	37.94	15.7	16.1	4.05	9.5	16.6	44.65	47.1	16.6	33.05	32.5	16.6	26.05	34.1
17.9	38.51	15.5	17.1	3.80	9.3	17.6	44.81	47.4	17.6	33.85	32.7	17.6	27.67	34.3
18.9	39.07	15.3	18.1	3.54	9.1	18.6	44.99	47.6	18.6	34.70	32.8	18.6	29.19	34.5
19.9	39.66	15.1	19.1	3.26	8.9	19.6	45.18	47.9	19.6	35.60	33.0	19.6	30.63	34.7
20.9	40.30	14.8	20.1	2.98	8.6	20.6	45.38	48.1	20.6	36.52	33.2	20.6	31.98	34.9
21.9	41.01	14.6	21.1	2.69	8.4	21.6	45.57	48.4	21.6	37.45	33.4	21.6	33.27	35.1
22.9	41.80	14.3	22.1	2.39	8.2	22.6	45.75	48.7	22.6	38.37	33.7	22.6	34.55	35.2
23.9	42.64	14.1	23.1	2.12	7.9	23.6	45.90	49.1	23.6	39.25	34.0	23.6	35.84	35.4
24.9	43.53	13.9	24.1	1.88	7.6	24.6	46.03	49.4	24.6	40.07	34.2	24.6	37.20	35.5
25.9	44.44	13.7	25.1	1.65	7.3	25.6	46.14	49.7	25.6	40.80	34.5	25.6	38.63	35.7
26.9	45.33	13.5	26.1	1.45	7.0	26.6	46.22	50.1	26.6	41.44	34.8	26.6	40.12	35.8
27.9	46.21	13.4	27.1	1.30	6.7	27.6	46.28	50.4	27.6	42.01	35.1	27.6	41.67	36.0
28.9	47.05	13.3	28.1	1.15	6.4	28.6	46.34	50.7	28.6	42.53	35.4	28.6	43.24	36.2
29.9	47.83	13.1	29.1	1.01	6.2	29.6	46.40	51.0	29.6	43.03	35.6	29.6	44.79	36.4
30.9	48.59	13.0	30.1	0.87	5.9	30.6	46.46	51.3	30.6	43.55	35.9	30.6	46.27	36.7
31.9	49.32	12.8	31.1	0.72	5.7	31.6	46.53	51.5	31.6	44.09	36.1	31.6	47.66	36.9
32.9	50.04	12.7	32.1	0.57	5.4	32.6	46.62	51.8	32.6	44.67	36.3	32.6	48.94	37.2

CIRCUMPOLAR STARS.

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

α Ursæ Min. (Polaris).			51 Cephei (Hæv.).			δ Ursæ Min.			λ Ursæ Min.			σ Octantis.		
Mean Solar Date.	Right Ascension.	Declination North.	Mean Solar Date.	Right Ascension.	Declination North.	Mean Solar Date.	Right Ascension.	Declination North.	Mean Solar Date.	Right Ascension.	Declination North.	Mean Solar Date.	Right Ascension.	Declination South.
June	h m 1 23	° +88 47	June	h m 6 54	° +87 11	June	h m 18 03	° +86 36	June	h m 19 19	° +88 59	June	h m 19 06	° -89 14
	s	"		s	"		s	"		s	"		s	"
1.9	50.04	12.7	1.1	60.57	65.4	1.6	46.62	51.8	1.6	44.67	36.3	1.6	48.94	37.2
2.9	50.80	12.5	2.1	60.40	65.2	2.6	46.72	52.1	2.6	45.30	36.6	2.6	50.12	37.4
3.8	51.63	12.3	3.1	60.22	64.9	3.5	46.82	52.4	3.6	45.97	36.8	3.6	51.22	37.7
4.8	52.52	12.2	4.1	60.02	64.6	4.5	46.91	52.7	4.6	46.66	37.1	4.6	52.25	37.9
5.8	53.46	12.0	5.1	59.84	64.3	5.5	46.99	53.1	5.6	47.31	37.4	5.6	53.25	38.1
6.8	54.45	11.8	6.1	59.67	64.0	6.5	47.06	53.4	6.6	47.94	37.7	6.6	54.28	38.3
7.8	55.49	11.7	7.1	59.52	63.7	7.5	47.10	53.8	7.6	48.49	38.0	7.6	55.35	38.5
8.8	56.53	11.6	8.1	59.39	63.4	8.5	47.12	54.1	8.6	48.96	38.4	8.6	56.47	38.7
9.8	57.54	11.5	9.1	59.29	63.0	9.5	47.12	54.5	9.6	49.35	38.7	9.6	57.64	38.9
10.8	58.51	11.4	10.1	59.23	62.7	10.5	47.11	54.8	10.6	49.68	39.0	10.6	58.85	39.2
11.8	59.44	11.3	11.1	59.18	62.4	11.5	47.08	55.1	11.6	49.96	39.3	11.6	60.06	39.4
12.8	60.33	11.2	12.1	59.14	62.1	12.5	47.07	55.4	12.6	50.25	39.6	12.6	61.23	39.7
13.8	61.18	11.1	13.0	59.09	61.9	13.5	47.06	55.7	13.6	50.56	39.9	13.6	62.33	40.0
14.8	62.00	11.1	14.0	59.04	61.6	14.5	47.06	56.0	14.6	50.89	40.1	14.6	63.31	40.3
15.8	62.85	11.0	15.0	58.96	61.3	15.5	47.08	56.3	15.6	51.26	40.4	15.6	64.20	40.6
16.8	63.72	10.9	16.0	58.87	61.1	16.5	47.11	56.6	16.6	51.67	40.7	16.6	64.99	40.8
17.8	64.65	10.7	17.0	58.78	60.8	17.5	47.12	56.9	17.6	52.09	41.0	17.5	65.72	41.1
18.8	65.66	10.6	18.0	58.69	60.5	18.5	47.13	57.3	18.6	52.51	41.3	18.5	66.40	41.4
19.8	66.73	10.5	19.0	58.61	60.1	19.5	47.12	57.6	19.6	52.87	41.6	19.5	67.06	41.6
20.8	67.83	10.5	20.0	58.55	59.8	20.5	47.09	58.0	20.6	53.18	42.0	20.5	67.76	41.9
21.8	68.96	10.4	21.0	58.52	59.5	21.5	47.03	58.3	21.6	53.41	42.3	21.5	68.54	42.1
22.8	70.09	10.4	22.0	58.52	59.1	22.5	46.95	58.7	22.6	53.55	42.7	22.5	69.37	42.3
23.8	71.18	10.4	23.0	58.55	58.8	23.5	46.85	59.0	23.6	53.60	43.0	23.5	70.26	42.6
24.8	72.25	10.4	24.0	58.60	58.4	24.5	46.73	59.4	24.6	53.59	43.4	24.5	71.18	42.9
25.8	73.25	10.4	25.0	58.68	58.1	25.5	46.61	59.7	25.5	53.55	43.7	25.5	72.10	43.2
26.8	74.19	10.4	26.0	58.75	57.8	26.5	46.50	60.0	26.5	53.52	44.0	26.5	72.95	43.5
27.8	75.11	10.4	27.0	58.81	57.5	27.5	46.39	60.2	27.5	53.50	44.3	27.5	73.73	43.8
28.8	76.02	10.4	28.0	58.86	57.2	28.5	46.29	60.5	28.5	53.51	44.6	28.5	74.39	44.1
29.8	76.93	10.4	29.0	58.90	57.0	29.5	46.21	60.8	29.5	53.57	44.9	29.5	74.93	44.4
30.8	77.90	10.3	30.0	58.93	56.7	30.5	46.13	61.1	30.5	53.67	45.2	30.5	75.38	44.7
31.8	78.91	10.3	31.0	58.95	56.4	31.5	46.06	61.4	31.5	53.79	45.5	31.5	75.73	45.0

CIRCUMPOLAR STARS.

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Ursæ Min. (Polaris).		Mean Solar Date.	γ Cephei (Hev.).		Mean Solar Date.	δ Ursæ Min.		Mean Solar Date.	λ Ursæ Min.		Mean Solar Date.	σ Octantis.	
	Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion South.
July	h m	°	July	h m	°	July	h m	°	July	h m	°	July	h m	°
	1 24	+88 47		6 54	+87 11		18 03	+86 37		19 19	+88 59		19 07	-89 14
	s	"		s	"		s	"		s	"		s	"
1.8	18.91	10.3	1.0	58.95	56.4	1.5	46.06	1.4	1.5	53.79	45.5	1.5	15.73	45.0
2.8	19.98	10.3	2.0	58.97	56.1	2.5	45.98	1.7	2.5	53.89	45.8	2.5	16.05	45.3
3.8	21.10	10.3	3.0	59.00	55.7	3.5	45.88	2.1	3.5	53.96	46.1	3.5	16.35	45.6
4.8	22.26	10.3	4.0	59.05	55.4	4.5	45.75	2.4	4.5	53.97	46.5	4.5	16.71	45.9
5.8	23.42	10.3	5.0	59.12	55.0	5.5	45.60	2.8	5.5	53.91	46.9	5.5	17.10	46.1
6.8	24.57	10.3	5.9	59.23	54.7	6.5	45.44	3.1	6.5	53.77	47.2	6.5	17.52	46.4
7.8	25.67	10.4	6.9	59.37	54.3	7.5	45.26	3.4	7.5	53.55	47.6	7.5	18.01	46.7
8.8	26.73	10.5	7.9	59.52	54.0	8.5	45.07	3.7	8.5	53.29	47.9	8.5	18.49	47.0
9.8	27.73	10.5	8.9	59.68	53.7	9.5	44.87	4.0	9.5	52.99	48.3	9.5	18.95	47.3
10.7	28.67	10.6	9.9	59.84	53.4	10.5	44.68	4.3	10.5	52.70	48.6	10.5	19.34	47.6
11.7	29.59	10.7	10.9	59.99	53.1	11.5	44.51	4.5	11.5	52.44	48.9	11.5	19.63	47.9
12.7	30.50	10.7	11.9	60.13	52.8	12.4	44.35	4.8	12.5	52.23	49.2	12.5	19.81	48.3
13.7	31.44	10.8	12.9	60.26	52.6	13.4	44.20	5.0	13.5	52.05	49.5	13.5	19.88	48.6
14.7	32.40	10.8	13.9	60.38	52.3	14.4	44.06	5.3	14.5	51.89	49.8	14.5	19.86	48.9
15.7	33.41	10.9	14.9	60.49	52.0	15.4	43.90	5.6	15.5	51.73	50.1	15.5	19.78	49.3
16.7	34.49	10.9	15.9	60.60	51.7	16.4	43.74	5.9	16.5	51.56	50.4	16.5	19.68	49.6
17.7	35.62	11.0	16.9	60.74	51.3	17.4	43.55	6.2	17.5	51.34	50.8	17.5	19.59	49.8
18.7	36.77	11.0	17.9	60.91	51.0	18.4	43.34	6.6	18.5	51.03	51.1	18.5	19.55	50.1
19.7	37.94	11.1	18.9	61.09	50.6	19.4	43.10	6.9	19.5	50.64	51.5	19.5	19.58	50.4
20.7	39.06	11.3	19.9	61.31	50.3	20.4	42.84	7.2	20.5	50.16	51.8	20.5	19.67	50.6
21.7	40.15	11.4	20.9	61.56	50.0	21.4	42.57	7.5	21.5	49.61	52.2	21.5	19.79	50.9
22.7	41.18	11.6	21.9	61.82	49.7	22.4	42.29	7.7	22.5	49.01	52.5	22.5	19.92	51.2
23.7	42.15	11.7	22.9	62.10	49.4	23.4	42.01	8.0	23.5	48.40	52.8	23.5	20.00	51.5
24.7	43.08	11.9	23.9	62.37	49.1	24.4	41.74	8.2	24.5	47.80	53.1	24.5	20.03	51.9
25.7	43.97	12.0	24.9	62.63	48.9	25.4	41.48	8.4	25.5	47.24	53.4	25.4	19.94	52.2
26.7	44.87	12.2	25.9	62.89	48.6	26.4	41.24	8.7	26.5	46.72	53.7	26.4	19.72	52.6
27.7	45.78	12.3	26.9	63.10	48.4	27.4	41.01	8.9	27.5	46.24	54.0	27.4	19.40	52.9
28.7	46.74	12.4	27.9	63.33	48.1	28.4	40.78	9.1	28.5	45.79	54.3	28.4	19.00	53.2
29.7	47.74	12.5	28.9	63.54	47.8	29.4	40.55	9.4	29.5	45.34	54.6	29.4	18.53	53.5
30.7	48.80	12.6	29.9	63.77	47.5	30.4	40.30	9.7	30.5	44.85	54.9	30.4	18.04	53.8
31.7	49.88	12.8	30.9	64.00	47.2	31.4	40.04	9.9	31.4	44.33	55.2	31.4	17.56	54.1
32.7	51.00	12.9	31.9	64.25	46.9	32.4	39.76	10.2	32.4	43.74	55.6	32.4	17.13	54.3

CIRCUMPOLAR STARS.

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Ursæ Min. (Polaris).		Mean Solar Date.	γ Cephei (Hæv.).		Mean Solar Date.	δ Ursæ Min.		Mean Solar Date.	λ Ursæ Min.		Mean Solar Date.	σ Octantis	
	Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion South.
Aug.	h m	° '	Aug.	h m	° '	Aug.	h m	° '	Aug.	h m	° '	Aug.	h m	° '
	1 24	+88 47		6 55	+87 11		18 03	+86 37		19 19	+88 59		19 06	-89 14
	s	"		s	"		s	"		s	"		s	"
1.7	51.00	12.9	1.9	4.53	46.6	1.4	39.76	10.2	1.4	43.74	55.6	1.4	77.13	54.3
2.7	52.08	13.1	2.9	4.85	46.3	2.4	39.46	10.5	2.4	43.08	55.9	2.4	76.73	54.6
3.7	53.12	13.3	3.9	5.18	46.0	3.4	39.13	10.7	3.4	42.33	56.3	3.4	76.40	54.8
4.7	54.13	13.5	4.9	5.52	45.7	4.4	38.79	11.0	4.4	41.53	56.6	4.4	76.08	55.1
5.7	55.06	13.7	5.9	5.87	45.4	5.4	38.45	11.2	5.4	40.70	56.9	5.4	75.75	55.4
6.7	55.93	14.0	6.9	6.21	45.2	6.4	38.12	11.4	6.4	39.88	57.2	6.4	75.36	55.7
7.7	56.76	14.2	7.9	6.54	45.0	7.4	37.81	11.6	7.4	39.06	57.4	7.4	74.89	56.0
8.7	57.57	14.4	8.9	6.84	44.7	8.4	37.50	11.8	8.4	38.29	57.7	8.4	74.31	56.3
9.7	58.37	14.5	9.9	7.14	44.5	9.4	37.21	11.9	9.4	37.57	57.9	9.4	73.62	56.7
10.7	59.21	14.7	10.9	7.42	44.3	10.4	36.92	12.1	10.4	36.88	58.2	10.4	72.84	57.0
11.7	60.08	14.9	11.9	7.71	44.0	11.4	36.64	12.3	11.4	36.21	58.5	11.4	71.97	57.3
12.7	61.01	15.1	12.9	8.01	43.8	12.4	36.35	12.5	12.4	35.52	58.8	12.4	71.08	57.5
13.7	62.00	15.3	13.9	8.33	43.5	13.4	36.04	12.8	13.4	34.79	59.1	13.4	70.20	57.8
14.7	63.01	15.5	14.9	8.69	43.2	14.4	35.71	13.0	14.4	33.99	59.4	14.4	69.35	58.0
15.6	64.01	15.7	15.9	9.06	42.9	15.4	35.36	13.2	15.4	33.13	59.7	15.4	68.56	58.2
16.6	65.02	16.0	16.9	9.46	42.6	16.3	34.98	13.4	16.4	32.18	60.0	16.4	67.85	58.4
17.6	65.96	16.2	17.9	9.89	42.4	17.3	34.59	13.6	17.4	31.14	60.3	17.4	67.17	58.7
18.6	66.87	16.5	18.9	10.34	42.2	18.3	34.19	13.8	18.4	30.05	60.6	18.4	66.50	58.9
19.6	67.69	16.8	19.9	10.78	42.0	19.3	33.80	14.0	19.4	28.94	60.8	19.4	65.84	59.2
20.6	68.45	17.1	20.9	11.20	41.8	20.3	33.41	14.1	20.4	27.85	61.1	20.4	65.12	59.5
21.6	69.19	17.4	21.9	11.62	41.6	21.3	33.03	14.2	21.4	26.78	61.3	21.4	64.30	59.8
22.6	69.89	17.6	22.9	12.02	41.4	22.3	32.67	14.3	22.4	25.75	61.5	22.4	63.38	60.0
23.6	70.61	17.9	23.9	12.39	41.2	23.3	32.32	14.5	23.4	24.78	61.7	23.4	62.35	60.3
24.6	71.34	18.1	24.8	12.76	41.0	24.3	31.99	14.6	24.4	23.85	61.9	24.4	61.23	60.6
25.6	72.13	18.3	25.8	13.12	40.8	25.3	31.65	14.7	25.4	22.94	62.2	25.4	60.03	60.8
26.6	72.97	18.6	26.8	13.50	40.6	26.3	31.30	14.9	26.4	22.02	62.4	26.4	58.80	61.0
27.6	73.84	18.8	27.8	13.90	40.3	27.3	30.94	15.1	27.4	21.06	62.7	27.4	57.57	61.2
28.6	74.73	19.1	28.8	14.30	40.1	28.3	30.56	15.3	28.4	20.04	63.0	28.4	56.39	61.4
29.6	75.62	19.4	29.8	14.75	39.9	29.3	30.16	15.4	29.4	18.96	63.2	29.3	55.27	61.6
30.6	76.46	19.7	30.8	15.21	39.7	30.3	29.75	15.6	30.4	17.81	63.5	30.3	54.20	61.8
31.6	77.27	20.0	31.8	15.70	39.5	31.3	29.32	15.7	31.4	16.60	63.8	31.3	53.16	62.0
32.6	77.99	20.3	32.8	16.18	39.3	32.3	28.90	15.8	32.4	15.34	64.0	32.3	52.13	62.2

CIRCUMPOLAR STARS.

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Ursæ Min. (Polaris).		Mean Solar Date.	γ Cephei (Hæv.).		Mean Solar Date.	δ Ursæ Min.		Mean Solar Date.	λ Ursæ Min.		Mean Solar Date.	σ Octantis.	
	Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion South.
Sept.	h m	°	Sept.	h m	°	Sept.	h m	°	Sept.	h m	°	Sept.	h m	°
	1 25	+88 47		6 55	+87 11		18 03	+86 37		19 18	+89 00		19 06	-89 15
	"	"		"	"		"	"		"	"		"	"
1.6	17.99	20.3	1.8	16.18	39.3	1.3	28.90	15.8	1.4	75.34	4.0	1.3	52.13	2.2
2.6	18.63	20.6	2.8	16.65	39.1	2.3	28.47	15.9	2.4	74.08	4.2	2.3	51.07	2.4
3.6	19.25	21.0	3.8	17.11	39.0	3.3	28.06	16.0	3.4	72.84	4.4	3.3	49.95	2.6
4.6	19.80	21.3	4.8	17.57	38.8	4.3	27.67	16.1	4.4	71.64	4.6	4.3	48.73	2.9
5.6	20.35	21.6	5.8	18.00	38.7	5.3	27.29	16.1	5.3	70.48	4.7	5.3	47.41	3.1
6.6	20.92	21.8	6.8	18.41	38.6	6.3	26.93	16.2	6.3	69.38	4.9	6.3	45.99	3.3
7.6	21.51	22.1	7.8	18.82	38.4	7.3	26.57	16.3	7.3	68.29	5.1	7.3	44.51	3.5
8.6	22.15	22.4	8.8	19.24	38.2	8.3	26.20	16.4	8.3	67.22	5.3	8.3	42.99	3.7
9.6	22.84	22.7	9.8	19.66	38.1	9.3	25.82	16.5	9.3	66.13	5.5	9.3	41.46	3.8
10.6	23.55	23.0	10.8	20.11	37.9	10.3	25.43	16.6	10.3	64.98	5.7	10.3	39.97	4.0
11.6	24.29	23.3	11.8	20.61	37.7	11.3	25.02	16.7	11.3	63.77	5.9	11.3	38.54	4.1
12.6	25.04	23.6	12.8	21.12	37.5	12.3	24.59	16.8	12.3	62.48	6.1	12.3	37.18	4.2
13.6	25.70	24.0	13.8	21.64	37.4	13.3	24.13	16.9	13.3	61.12	6.3	13.3	35.90	4.3
14.6	26.33	24.4	14.8	22.18	37.2	14.3	23.67	16.9	14.3	59.69	6.5	14.3	34.64	4.4
15.6	26.90	24.7	15.8	22.73	37.1	15.3	23.20	17.0	15.3	58.23	6.7	15.3	33.42	4.6
16.6	27.38	25.1	16.8	23.27	37.0	16.3	22.74	17.0	16.3	56.79	6.8	16.3	32.16	4.7
17.6	27.82	25.5	17.8	23.80	36.9	17.3	22.30	17.0	17.3	55.37	7.0	17.3	30.84	4.9
18.6	28.21	25.8	18.8	24.28	36.9	18.3	21.87	17.0	18.3	53.99	7.1	18.3	29.43	5.1
19.6	28.61	26.2	19.8	24.76	36.8	19.3	21.46	17.0	19.3	52.67	7.2	19.3	27.93	5.2
20.6	29.02	26.5	20.8	25.23	36.7	20.3	21.07	17.0	20.3	51.40	7.3	20.3	26.32	5.4
21.5	29.47	26.8	21.8	25.68	36.6	21.3	20.68	17.0	21.3	50.18	7.4	21.3	24.65	5.5
22.5	29.96	27.1	22.8	26.13	36.5	22.2	20.30	17.0	22.3	48.96	7.6	22.3	22.94	5.6
23.5	30.49	27.4	23.8	26.61	36.4	23.2	19.90	17.1	23.3	47.70	7.7	23.3	21.22	5.6
24.5	31.03	27.8	24.8	27.10	36.2	24.2	19.49	17.1	24.3	46.42	7.9	24.3	19.56	5.7
25.5	31.58	28.1	25.8	27.61	36.1	25.2	19.06	17.1	25.3	45.09	8.0	25.3	17.98	5.7
26.5	32.09	28.5	26.8	28.15	36.0	26.2	18.61	17.2	26.3	43.68	8.2	26.3	16.44	5.8
27.5	32.57	28.9	27.8	28.69	35.9	27.2	18.15	17.2	27.3	42.21	8.3	27.3	14.98	5.8
28.5	32.97	29.3	28.8	29.25	35.8	28.2	17.69	17.2	28.3	40.70	8.5	28.3	13.53	5.9
29.5	33.30	29.7	29.8	29.81	35.8	29.2	17.24	17.1	29.3	39.19	8.6	29.3	12.11	5.9
30.5	33.56	30.0	30.8	30.34	35.8	30.2	16.80	17.1	30.3	37.70	8.7	30.3	10.64	6.0
31.5	33.78	30.4	31.7	30.86	35.7	31.2	16.37	17.0	31.3	36.23	8.7	31.3	9.10	6.1

CIRCUMPOLAR STARS.

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Ursæ Min. (Polaris).		Mean Solar Date.	51 Cephei (Hev.).		Mean Solar Date.	δ Ursæ Min.		Mean Solar Date.	λ Ursæ Min.		Mean Solar Date.	σ Octantis.	
	Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion South.
Oct.	h m 1 25	° +88 47	Oct.	h m 6 55	° +87 11	Oct.	h m 18 03	° +86 37	Oct.	h m 19 17	° +89 00	Oct.	h m 19 05	° -89 15
	s	"		s	"		s	"		s	"		s	"
1.5	33.78	30.4	1.7	30.86	35.7	1.2	16.37	17.0	1.3	96.23	8.7	1.3	69.10	6.1
2.5	33.98	30.8	2.7	31.36	35.7	2.2	15.96	16.9	2.3	94.81	8.8	2.3	67.47	6.2
3.5	34.16	31.1	3.7	31.85	35.7	3.2	15.57	16.9	3.3	93.46	8.8	3.3	65.76	6.2
4.5	34.38	31.5	4.7	32.31	35.7	4.2	15.18	16.8	4.3	92.16	8.9	4.3	63.98	6.3
5.5	34.62	31.8	5.7	32.78	35.6	5.2	14.81	16.8	5.3	90.87	8.9	5.2	62.15	6.3
6.5	34.93	32.1	6.7	33.25	35.6	6.2	14.43	16.7	6.3	89.60	9.0	6.2	60.32	6.3
7.5	35.27	32.5	7.7	33.74	35.5	7.2	14.03	16.7	7.3	88.29	9.1	7.2	58.51	6.3
8.5	35.62	32.9	8.7	34.26	35.5	8.2	13.62	16.7	8.3	86.92	9.2	8.2	56.79	6.3
9.5	35.97	33.2	9.7	34.79	35.4	9.2	13.19	16.6	9.3	85.49	9.3	9.2	55.15	6.2
10.5	36.28	33.6	10.7	35.35	35.4	10.2	12.74	16.6	10.3	83.99	9.4	10.2	53.59	6.2
11.5	36.54	34.0	11.7	35.93	35.3	11.2	12.28	16.5	11.3	82.42	9.4	11.2	52.13	6.1
12.5	36.74	34.5	12.7	36.52	35.3	12.2	11.82	16.4	12.3	80.82	9.5	12.2	50.71	6.1
13.5	36.85	34.9	13.7	37.09	35.4	13.2	11.37	16.3	13.2	79.22	9.5	13.2	49.30	6.1
14.5	36.91	35.3	14.7	37.64	35.4	14.2	10.92	16.2	14.2	77.66	9.5	14.2	47.86	6.1
15.5	36.93	35.7	15.7	38.18	35.4	15.2	10.51	16.1	15.2	76.13	9.5	15.2	46.33	6.1
16.5	36.91	36.0	16.7	38.69	35.5	16.2	10.11	15.9	16.2	74.66	9.5	16.2	44.73	6.1
17.5	36.91	36.4	17.7	39.18	35.6	17.2	9.73	15.8	17.2	73.27	9.5	17.2	43.06	6.1
18.5	36.93	36.8	18.7	39.66	35.6	18.2	9.37	15.7	18.2	71.92	9.5	18.2	41.32	6.0
19.5	37.00	37.1	19.7	40.13	35.6	19.2	9.00	15.6	19.2	70.59	9.5	19.2	39.55	6.0
20.5	37.09	37.4	20.7	40.62	35.6	20.2	8.63	15.5	20.2	69.29	9.5	20.2	37.78	5.9
21.5	37.20	37.8	21.7	41.12	35.6	21.2	8.25	15.4	21.2	67.95	9.5	21.2	36.05	5.8
22.5	37.34	38.2	22.7	41.62	35.6	22.2	7.86	15.3	22.2	66.55	9.5	22.2	34.41	5.6
23.5	37.45	38.6	23.7	42.15	35.6	23.2	7.45	15.2	23.2	65.11	9.5	23.2	32.84	5.5
24.5	37.51	39.0	24.7	42.70	35.7	24.2	7.03	15.0	24.2	63.61	9.5	24.2	31.34	5.4
25.5	37.52	39.4	25.7	43.25	35.7	25.2	6.61	14.9	25.2	62.07	9.5	25.2	29.92	5.3
26.5	37.46	39.8	26.7	43.80	35.8	26.2	6.19	14.7	26.2	60.51	9.5	26.2	28.55	5.2
27.5	37.33	40.1	27.7	44.34	35.9	27.2	5.78	14.6	27.2	58.99	9.5	27.2	27.17	5.1
28.4	37.13	40.5	28.7	44.87	36.0	28.1	5.40	14.4	28.2	57.50	9.4	28.2	25.75	5.0
29.4	36.88	40.9	29.7	45.36	36.1	29.1	5.04	14.1	29.2	56.07	9.3	29.2	24.25	4.9
30.4	36.65	41.3	30.7	45.82	36.2	30.1	4.69	13.9	30.2	54.70	9.2	30.2	22.69	4.8
31.4	36.41	41.6	31.7	46.27	36.3	31.1	4.36	13.7	31.2	53.40	9.1	31.2	21.06	4.7
32.4	36.20	41.9	32.7	46.71	36.4	32.1	4.04	13.5	32.2	52.14	9.0	32.2	19.40	4.6

CIRCUMPOLAR STARS.

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Ursæ Min. (Polaris)		Mean Solar Date.	51 Cephei (Hev.)		Mean Solar Date.	δ Ursæ Min.		Mean Solar Date.	λ Ursæ Min.		Mean Solar Date.	σ Octantis.	
	Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion South.
Nov.	h m	° ' "	Nov.	h m	° ' "	Nov.	h m	° ' "	Nov.	h m	° ' "	Nov.	h m	° ' "
	1 25	+88 47		6 55	+87 11		18 02	+86 37		19 17	+89 00		19 04	-89 14
	"	"		"	"		"	"		"	"		"	"
1.4	36.20	41.9	1.7	46.71	36.4	1.1	64.04	13.5	1.2	52.14	9.0	1.2	79.40	64.6
2.4	36.04	42.2	2.7	47.16	36.5	2.1	63.74	13.4	2.2	50.88	9.0	2.2	77.74	64.4
3.4	35.92	42.6	3.7	47.60	36.6	3.1	63.41	13.2	3.2	49.61	8.9	3.2	76.12	64.2
4.4	35.83	42.9	4.7	48.07	36.7	4.1	63.07	13.1	4.2	48.32	8.9	4.2	74.57	64.0
5.4	35.73	43.3	5.7	48.57	36.8	5.1	62.71	12.9	5.2	46.98	8.8	5.2	73.13	63.8
6.4	35.62	43.6	6.6	49.07	36.8	6.1	62.34	12.7	6.2	45.59	8.8	6.2	71.79	63.6
7.4	35.46	44.0	7.6	49.59	37.0	7.1	61.96	12.5	7.2	44.12	8.7	7.2	70.56	63.4
8.4	35.23	44.4	8.6	50.13	37.1	8.1	61.58	12.3	8.2	42.62	8.6	8.2	69.41	63.2
9.4	34.94	44.8	9.6	50.65	37.2	9.1	61.20	12.1	9.2	41.12	8.5	9.2	68.27	63.0
10.4	34.57	45.2	10.6	51.16	37.4	10.1	60.84	11.8	10.2	39.65	8.4	10.2	67.14	62.9
11.4	34.13	45.6	11.6	51.65	37.6	11.1	60.49	11.6	11.2	38.22	8.3	11.2	65.98	62.7
12.4	33.68	46.0	12.6	52.11	37.8	12.1	60.17	11.3	12.2	36.85	8.1	12.2	64.75	62.6
13.4	33.22	46.3	13.6	52.55	38.0	13.1	59.88	11.1	13.2	35.56	7.9	13.1	63.46	62.4
14.4	32.78	46.6	14.6	52.97	38.1	14.1	59.60	10.8	14.2	34.33	7.8	14.1	62.11	62.2
15.4	32.37	46.9	15.6	53.37	38.3	15.1	59.33	10.6	15.2	33.15	7.6	15.1	60.73	62.0
16.4	32.01	47.2	16.6	53.76	38.4	16.1	59.06	10.3	16.2	32.01	7.5	16.1	59.37	61.8
17.4	31.67	47.5	17.6	54.18	38.6	17.1	58.78	10.1	17.1	30.87	7.4	17.1	58.05	61.5
18.4	31.36	47.8	18.6	54.60	38.7	18.1	58.50	9.9	18.1	29.68	7.2	18.1	56.81	61.2
19.4	31.04	48.2	19.6	55.03	38.9	19.1	58.20	9.7	19.1	28.47	7.1	19.1	55.68	61.0
20.4	30.69	48.5	20.6	55.50	39.0	20.1	57.89	9.4	20.1	27.19	7.0	20.1	54.63	60.7
21.4	30.26	48.9	21.6	55.95	39.2	21.1	57.59	9.2	21.1	25.87	6.9	21.1	53.69	60.4
22.4	29.78	49.2	22.6	56.42	39.4	22.1	57.29	8.9	22.1	24.54	6.7	22.1	52.79	60.2
23.4	29.22	49.6	23.6	56.86	39.6	23.1	56.99	8.6	23.1	23.23	6.5	23.1	51.94	59.9
24.4	28.59	49.9	24.6	57.28	39.8	24.1	56.71	8.3	24.1	21.96	6.3	24.1	51.06	59.7
25.4	27.93	50.2	25.6	57.68	40.1	25.1	56.45	8.0	25.1	20.74	6.1	25.1	50.14	59.5
26.4	27.23	50.5	26.6	58.05	40.3	26.1	56.22	7.7	26.1	19.62	5.9	26.1	49.15	59.2
27.4	26.55	50.8	27.6	58.40	40.6	27.1	56.01	7.4	27.1	18.56	5.6	27.1	48.11	59.0
28.4	25.90	51.0	28.6	58.72	40.8	28.1	55.82	7.1	28.1	17.57	5.4	28.1	47.05	58.7
29.4	25.27	51.3	29.6	59.04	41.0	29.1	55.64	6.8	29.1	16.61	5.2	29.1	45.98	58.5
30.4	24.70	51.6	30.6	59.37	41.2	30.1	55.46	6.5	30.1	15.67	5.0	30.1	44.96	58.2
31.4	24.15	51.8	31.6	59.70	41.4	31.1	55.26	6.2	31.1	14.71	4.8	31.1	44.01	57.9

CIRCUMPOLAR STARS.

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Ursæ Min. (Polaris).		Mean Solar Date.	ζ Cephei (Hev.).		Mean Solar Date.	δ Ursæ Min.		Mean Solar Date.	λ Ursæ Min.		Mean Solar Date.	σ Octantis.	
	Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion South.
Dec.	h m 1 24	° +88 47	Dec.	h m 6 55	° +87 11	Dec.	h m 18 02	° +86 36	Dec.	h m 19 16	° +88 59	Dec.	h m 19 04	° -89 14
	s	"		s	"		s	"		s	"		s	"
1.4	84.15	51.8	1.6	59.70	41.4	1.1	55.26	66.2	1.1	74.71	64.8	1.1	44.01	57.9
2.4	83.62	52.1	2.6	60.05	41.6	2.1	55.05	66.0	2.1	73.70	64.6	2.1	43.16	57.5
3.3	83.09	52.4	3.6	60.43	41.8	3.1	54.83	65.7	3.1	72.65	64.4	3.1	42.41	57.2
4.3	82.53	52.7	4.6	60.81	42.0	4.0	54.60	65.4	4.1	71.55	64.2	4.1	41.79	56.9
5.3	81.90	53.0	5.6	61.20	42.3	5.0	54.36	65.1	5.1	70.41	64.0	5.1	41.27	56.5
6.3	81.21	53.3	6.6	61.59	42.5	6.0	54.14	64.8	6.1	69.26	63.8	6.1	40.82	56.2
7.3	80.45	53.6	7.6	61.95	42.8	7.0	53.92	64.5	7.1	68.14	63.6	7.1	40.40	55.9
8.3	79.63	53.9	8.6	62.29	43.1	8.0	53.72	64.1	8.1	67.07	63.3	8.1	39.98	55.7
9.3	78.76	54.1	9.6	62.62	43.4	9.0	53.55	63.8	9.1	66.08	63.0	9.1	39.49	55.4
10.3	77.89	54.4	10.6	62.90	43.7	10.0	53.40	63.4	10.1	65.16	62.7	10.1	38.95	55.1
11.3	77.03	54.6	11.6	63.18	44.0	11.0	53.27	63.1	11.1	64.32	62.4	11.1	38.37	54.8
12.3	76.20	54.8	12.5	63.43	44.3	12.0	53.16	62.7	12.1	63.54	62.2	12.1	37.75	54.5
13.3	75.42	55.0	13.5	63.66	44.5	13.0	53.05	62.4	13.1	62.81	61.9	13.1	37.14	54.2
14.3	74.69	55.2	14.5	63.90	44.8	14.0	52.94	62.1	14.1	62.08	61.6	14.1	36.58	53.9
15.3	73.97	55.4	15.5	64.16	45.0	15.0	52.84	61.8	15.1	61.35	61.4	15.1	36.07	53.5
16.3	73.27	55.6	16.5	64.42	45.3	16.0	52.72	61.5	16.1	60.60	61.2	16.1	35.68	53.2
17.3	72.55	55.9	17.5	64.69	45.5	17.0	52.58	61.2	17.1	59.82	60.9	17.0	35.39	52.8
18.3	71.77	56.1	18.5	64.97	45.8	18.0	52.43	60.9	18.1	58.99	60.7	18.0	35.21	52.4
19.3	70.95	56.3	19.5	65.25	46.1	19.0	52.30	60.6	19.1	58.14	60.4	19.0	35.10	52.1
20.3	70.05	56.5	20.5	65.53	46.4	20.0	52.18	60.2	20.1	57.31	60.1	20.0	35.05	51.8
21.3	69.10	56.8	21.5	65.77	46.7	21.0	52.08	59.9	21.1	56.52	59.8	21.0	35.01	51.4
22.3	68.09	57.0	22.5	65.99	47.0	22.0	52.00	59.5	22.1	55.78	59.5	22.0	34.94	51.1
23.3	67.05	57.1	23.5	66.17	47.4	22.9	51.94	59.1	23.0	55.13	59.2	23.0	34.83	50.8
24.3	66.02	57.3	24.5	66.34	47.7	23.9	51.91	58.8	24.0	54.57	58.8	24.0	34.66	50.5
25.3	65.00	57.4	25.5	66.48	48.0	24.9	51.90	58.4	25.0	54.08	58.5	25.0	34.45	50.2
26.3	64.04	57.5	26.5	66.60	48.3	25.9	51.90	58.0	26.0	53.65	58.2	26.0	34.22	49.9
27.3	63.11	57.6	27.5	66.73	48.6	26.9	51.90	57.7	27.0	53.24	57.9	27.0	34.01	49.5
28.3	62.24	57.8	28.5	66.84	48.9	27.9	51.90	57.4	28.0	52.84	57.6	28.0	33.88	49.2
29.3	61.41	57.9	29.5	66.98	49.2	28.9	51.88	57.1	29.0	52.42	57.3	29.0	33.84	48.8
30.3	60.57	58.0	30.5	67.14	49.5	29.9	51.85	56.8	30.0	51.96	57.0	30.0	33.93	48.4
31.3	59.72	58.2	31.5	67.30	49.8	30.9	51.82	56.5	31.0	51.45	56.8	31.0	34.13	48.0
32.3	58.82	58.3	32.5	67.46	50.1	31.9	51.78	56.2	32.0	50.90	56.5	32.0	34.45	47.7

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	43 Cephei (H.).		μ Hydri.		47 Cephei (H.).		δ Mensæ.		Groombridge 944.	
	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion North.
	h m 0 55	° ' " +85 44	h m 2 33	° ' " -79 31	h m 2 53	° ' " +79 01	h m 4 24	° ' " -80 26	h m 5 30	° ' " +85 08
Jan. 0.4	34.33	2.81	33.7	1.16	78.9	0.9	36.12	0.98	69.33	0.44
10.3	31.52	2.84	34.1	1.22	79.8	0.81	35.14	1.16	68.89	0.93
20.3	28.68	2.74	33.9	1.25	80.2	0.4	33.98	1.29	67.96	1.39
30.3	25.94	2.55	33.1	1.24	79.9	0.8	32.69	1.40	66.57	1.79
Feb. 9.2	23.39	2.25	31.6	1.21	79.1	1.4	31.29	1.45	64.78	2.11
19.2	21.14	1.87	29.6	1.13	77.7	1.9	29.84	1.48	62.67	2.34
Mar. 1.2	19.27	1.40	27.1	1.03	75.8	2.4	28.36	1.46	60.33	2.47
11.2	17.87	0.89	24.3	0.90	73.4	2.8	26.90	1.40	57.86	2.49
21.1	16.98	0.35	21.3	0.76	70.6	3.1	25.50	1.32	55.37	2.42
31.1	16.63	0.22	18.1	0.59	67.5	3.3	24.18	1.20	52.95	2.24
Apr. 10.1	16.85	0.76	15.0	0.41	64.2	3.6	22.98	1.05	50.71	1.97
20.1	17.61	1.27	11.9	0.22	60.6	3.6	21.93	0.88	48.74	1.65
30.0	18.88	1.73	9.2	0.02	57.0	3.7	21.05	0.68	47.09	1.25
May 10.0	20.61	2.13	6.7	0.17	53.3	3.6	20.37	0.47	45.84	0.82
20.0	22.74	2.47	4.7	0.37	49.7	3.5	19.90	0.25	45.02	0.36
29.9	25.21	2.71	3.1	0.55	46.2	3.2	19.65	0.03	44.66	0.10
June 8.9	27.92	2.88	2.1	0.72	43.0	2.9	19.62	0.19	44.76	0.56
18.9	30.80	2.98	1.6	0.88	40.1	2.6	19.81	0.42	45.32	1.00
28.9	33.78	2.98	1.7	1.00	37.5	2.1	20.23	0.62	46.32	1.41
July 8.8	36.76	2.93	2.3	1.10	35.4	1.6	20.85	0.81	47.73	1.79
18.8	39.69	2.79	3.5	1.16	33.8	1.1	21.66	0.97	49.52	2.12
28.8	42.48	2.61	5.2	1.20	32.7	0.4	22.63	1.12	51.64	2.41
Aug. 7.8	45.09	2.36	7.3	1.20	32.3	0.1	23.75	1.21	54.05	2.64
17.7	47.45	2.07	9.9	1.15	32.4	0.8	24.96	1.28	56.69	2.82
27.7	49.52	1.73	12.8	1.07	33.2	1.3	26.24	1.31	59.51	2.94
Sept. 6.7	51.25	1.37	16.1	0.95	34.5	1.9	27.55	1.29	62.45	3.01
16.6	52.62	0.96	19.6	0.80	36.4	2.3	28.84	1.23	65.46	3.03
26.6	53.58	0.54	23.2	0.63	38.7	2.8	30.07	1.12	68.49	2.97
Oct. 6.6	54.12	0.10	26.9	0.42	41.5	3.1	31.19	0.98	71.46	2.85
16.6	54.22	0.34	30.7	0.21	44.6	3.2	32.17	0.80	74.31	2.68
26.5	53.88	0.80	34.4	0.01	47.8	2.5	32.97	0.59	76.99	2.43
Nov. 5.5	53.08	1.23	37.9	0.24	51.2	3.4	33.56	0.35	79.42	2.14
15.5	51.85	1.64	41.2	0.45	54.4	3.1	33.91	0.10	81.56	1.77
25.5	50.21	2.02	44.2	0.66	57.5	2.8	34.01	0.15	83.33	1.35
Dec. 5.4	48.19	2.35	46.7	0.83	60.3	2.3	33.86	0.40	84.68	0.89
15.4	45.84	2.61	48.7	1.5	62.6	1.9	33.46	0.63	85.57	0.39
25.4	43.23	2.78	50.2	0.8	64.5	1.3	32.83	0.86	85.96	0.12
35.3	40.45	3.10	51.0	1.10	65.8	0.72	31.97	1.10	85.84	0.12

FIXED STARS, 1903.

(CONSTANTS OF PARIS CONFERENCE.)

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APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	ζ Mensæ.		25 Camelopardalis.		ι Draconis (H.).		ζ Chamæleontis.		δ Chamæleontis.	
	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion South.
	h m 6 47	° ' " -80 42	h m 7 10	° ' " +82 35	h m 9 23	° ' " +81 44	h m 9 36	° ' " -80 30	h m 10 44	° ' " -80 01
Jan. 0.6	76.17 ^s	50.1 ["]	53.11 ^s	44.9 ["]	22.96 ^s	58.6 ["]	53.82 ^s	13.1 ["]	59.68 ^s	30.8 ["]
10.6	75.91 ^{0.26}	53.7 ^{3.6}	53.59 ^{0.48}	47.9 ^{3.0}	24.16 ^{1.20}	60.7 ^{2.1}	54.58 ^{0.76}	16.4 ^{3.3}	60.73 ^{1.05}	33.5 ^{2.7}
20.5	75.39 ^{0.52}	57.2 ^{3.5}	53.72 ^{0.13}	51.0 ^{3.1}	25.11 ^{0.95}	63.2 ^{2.5}	55.12 ^{0.54}	20.0 ^{3.6}	61.61 ^{0.88}	36.7 ^{3.2}
30.5	74.64 ^{0.75}	60.4 ^{3.2}	53.51 ^{0.21}	54.0 ^{3.0}	25.78 ^{0.67}	66.0 ^{2.8}	55.43 ^{0.31}	23.8 ^{3.8}	62.30 ^{0.69}	40.2 ^{3.5}
Feb. 9.5	73.67 ^{0.97}	63.3 ^{2.9}	52.95 ^{0.56}	56.8 ^{2.8}	26.14 ^{0.36}	69.0 ^{3.0}	55.49 ^{0.06}	27.7 ^{3.9}	62.79 ^{0.49}	43.9 ^{3.7}
	1.15	2.5	0.86	2.6	0.05	3.1	0.17	3.8	0.28	3.9
19.5	72.52	65.8	52.09	59.4	26.19	72.1	55.32	31.5	63.07	47.8
Mar. 1.4	71.22 ^{1.30}	67.8 ^{2.0}	50.97 ^{1.12}	61.6 ^{2.2}	25.94 ^{0.25}	75.1 ^{3.0}	54.93 ^{0.39}	35.3 ^{3.8}	63.13 ^{0.06}	51.6 ^{3.8}
	1.41	1.6	1.34	1.7	0.54	2.9	0.59	3.5	0.15	3.9
11.4	69.81	69.4	49.63	63.3	25.40	78.0	54.34	38.8	62.98	55.5
	1.48	1.0	1.50	1.2	0.80	2.6	0.78	3.2	0.33	3.7
21.4	68.33	70.4	48.13	64.5	24.60	80.6	53.56	42.0	62.65	59.2
	1.51	0.6	1.58	0.7	1.01	2.2	0.93	2.9	0.51	3.4
31.3	66.82	71.0	46.55	65.2	23.59	82.8	52.63	44.9	62.14	62.6
	1.51	0.0	1.60	0.0	1.19	1.8	1.06	2.5	0.67	3.2
Apr. 10.3	65.31	71.0	44.95	65.2	22.40	84.6	51.57	47.4	61.47	65.8
	1.47	0.5	1.56	0.5	1.31	1.3	1.17	2.1	0.82	2.9
20.3	63.84	70.5	43.39	64.7	21.09	85.9	50.40	49.5	60.65	68.7
	1.40	1.0	1.45	1.0	1.37	0.7	1.24	1.6	0.93	2.4
30.3	62.44	69.5	41.94	63.7	19.72	86.6	49.16	51.1	59.72	71.1
	1.28	1.5	1.29	1.6	1.38	0.2	1.28	1.0	1.02	1.9
May 10.2	61.16	68.0	40.65	62.1	18.34	86.8	47.88	52.1	58.70	73.0
	1.16	1.9	1.09	2.0	1.34	0.4	1.29	0.5	1.09	1.5
20.2	60.00	66.1	39.56	60.1	17.00	86.4	46.59	52.6	57.61	74.5
	0.98	2.3	0.85	2.4	1.27	1.0	1.28	0.0	1.14	0.9
30.2	59.02	63.8	38.71	57.7	15.73	85.4	45.31	52.6	56.47	75.4
	0.80	2.6	0.59	2.6	1.14	1.5	1.22	0.6	1.15	0.4
June 9.2	58.22	61.2	38.12	55.1	14.59	83.9	44.09	52.0	55.32	75.8
	0.60	3.0	0.30	2.9	0.98	1.9	1.15	1.1	1.14	0.2
19.1	57.62	58.2	37.82	52.2	13.61	82.0	42.94	50.9	54.18	75.6
	0.38	3.1	0.02	3.0	0.81	2.4	1.05	1.6	1.10	0.8
29.1	57.24	55.1	37.80	49.2	12.80	79.6	41.89	49.3	53.08	74.8
	0.14	3.2	0.27	3.1	0.60	2.7	0.90	2.0	1.03	1.2
July 9.1	57.10	51.9	38.07	46.1	12.20	76.9	40.99	47.3	52.05	73.6
	0.08	3.2	0.54	3.0	0.39	2.9	0.75	2.5	0.93	1.8
19.0	57.18	48.7	38.61	43.1	11.81	74.0	40.24	44.8	51.12	71.8
	0.32	3.2	0.81	2.9	0.16	3.2	0.56	2.7	0.79	2.2
29.0	57.50	45.5	39.42	40.2	11.65	70.8	39.68	42.1	50.33	69.6
	0.54	3.0	1.05	2.8	0.07	3.3	0.35	3.0	0.64	2.5
Aug. 8.0	58.04	42.5	40.47	37.4	11.72	67.5	39.33	39.1	49.69	67.1
	0.76	2.7	1.28	2.6	0.29	3.4	0.14	3.1	0.46	2.9
18.0	58.80	39.8	41.75	34.8	12.01	64.1	39.19	36.0	49.23	64.2
	0.94	2.3	1.48	2.3	0.52	3.4	0.10	3.2	0.26	3.0
27.9	59.74	37.5	43.23	32.5	12.53	60.7	39.29	32.8	48.97	61.2
	1.11	1.9	1.65	2.0	0.73	3.3	0.33	3.1	0.04	3.2
Sept. 6.9	60.85	35.6	44.88	30.5	13.26	57.4	39.62	29.7	48.93	58.0
	1.23	1.3	1.79	1.6	0.94	3.2	0.55	2.9	0.18	3.1
16.9	62.08	34.3	46.67	28.9	14.20	54.2	40.17	26.8	49.11	54.9
	1.32	0.8	1.90	1.3	1.13	3.0	0.77	2.6	0.42	3.0
26.9	63.40	33.5	48.57	27.6	15.33	51.2	40.94	24.2	49.53	51.9
	1.37	0.1	1.98	0.8	1.30	2.7	0.97	2.2	0.63	2.7
Oct. 6.8	64.77	33.4	50.55	26.8	16.63	48.5	41.91	22.0	50.16	49.2
	1.37	0.5	2.01	0.3	1.45	2.3	1.13	1.6	0.84	2.4
16.8	66.14	33.9	52.56	26.5	18.08	46.2	43.04	20.4	51.00	46.8
	1.31	1.2	2.01	0.1	1.58	2.0	1.26	1.1	1.01	1.9
26.8	67.45	35.1	54.57	26.6	19.66	44.2	44.30	19.3	52.01	44.9
	1.22	1.8	1.95	0.6	1.68	1.5	1.35	0.5	1.16	1.3
Nov. 5.7	68.67	36.9	56.52	27.2	21.34	42.7	45.65	18.8	53.17	43.6
	1.07	2.3	1.86	1.1	1.74	1.0	1.39	0.2	1.27	0.7
15.7	69.74	39.2	58.38	28.3	23.08	41.7	47.04	19.0	54.44	42.9
	0.89	2.8	1.72	1.6	1.75	0.4	1.38	0.9	1.34	0.1
25.7	70.63	42.0	60.10	29.9	24.83	41.3	48.42	19.9	55.78	42.8
	0.67	3.2	1.53	2.0	1.72	0.1	1.32	1.5	1.36	0.6
Dec. 5.7	71.30	45.2	61.63	31.9	26.55	41.4	49.74	21.4	57.14	43.4
	0.43	3.4	1.29	2.1	1.65	0.7	1.21	2.1	1.32	1.2
15.6	71.73	48.6	62.92	34.2	28.20	42.1	50.95	23.5	58.46	44.6
	0.17	3.5	1.01	2.7	1.52	1.3	1.06	2.6	1.25	1.9
25.6	71.90	52.1	63.93	36.9	29.72	43.4	52.01	26.1	59.71	46.5
	0.10	3.6	0.69	3.0	1.34	1.8	0.88	3.0	1.13	2.4
35.6	71.80	55.7	64.62	39.9	31.06	45.2	52.89	29.1	60.84	48.9

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	η Octantis.		β Chamæleontis.		6 Ursæ Min. (B.)		32 ^a Camelop. (H.)		κ Octantis.	
	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion South.
	h m 10 59	° ' " 84 04	h m 12 12	° ' " 78 46	h m 12 13	° ' " 88 13	h m 12 48	° ' " 83 55	h m 13 25	° ' " 85 17
Jan. 0.7	71.05 1.80	6.0 2.5	42.95 1.21	7.5 1.7	68.3 7.2	52.9 0.0	18.16 2.16	63.5 0.5	13.27 2.94	0.3 0.4
10.7	72.85 1.54	8.5 2.9	44.16 1.12	9.2 2.2	75.5 7.0	52.9 0.7	20.32 2.15	63.0 0.1	16.21 2.91	0.7 1.1
20.7	74.39 1.24	11.4 3.4	45.28 1.01	11.4 2.7	82.5 6.5	53.6 1.3	22.47 2.05	63.0 0.7	19.12 2.79	1.8 1.6
30.7	75.63 0.91	14.8 3.6	46.29 0.87	14.1 3.1	89.0 5.7	54.9 1.9	24.52 1.88	63.8 1.4	21.91 2.60	3.4 2.2
Feb. 9.6	76.54 0.57	18.4 3.8	47.16 0.72	17.2 3.4	94.7 4.8	56.8 2.4	26.40 1.65	65.2 2.0	24.51 2.36	5.6 2.6
19.6	77.11 0.23	22.2 3.8	47.88 0.55	20.6 3.6	99.5 3.6	59.2 2.7	28.05 1.35	67.2 2.4	26.87 2.07	8.2 2.9
Mar. 1.6	77.34 0.11	26.0 3.9	48.43 0.38	24.2 3.7	103.1 2.4	61.9 3.0	29.40 1.01	69.6 2.8	28.94 1.73	11.1 3.3
11.5	77.23 0.43	29.9 3.8	48.81 0.21	27.9 3.8	105.5 1.1	64.9 3.2	30.41 0.64	72.4 3.0	30.67 1.37	14.4 3.5
21.5	76.80 0.74	33.7 3.6	49.02 0.03	31.7 3.8	106.6 0.3	68.1 3.2	31.05 0.24	75.4 3.2	32.04 1.00	17.9 3.6
31.5	76.06 1.02	37.3 3.3	49.05 0.12	35.5 3.6	106.3 1.6	71.3 3.1	31.29 0.14	78.6 3.2	33.04 0.59	21.5 3.7
Apr. 10.5	75.04 1.27	40.6 3.1	48.93 0.29	39.1 3.4	104.7 2.8	74.4 2.9	31.15 0.50	81.8 3.1	33.63 0.20	25.2 3.7
20.4	73.77 1.49	43.7 2.6	48.64 0.42	42.5 3.1	101.9 3.9	77.3 2.6	30.65 0.85	84.9 2.8	33.83 0.19	28.9 3.6
30.4	72.28 1.67	46.3 2.2	48.22 0.56	45.6 2.8	98.0 4.9	79.9 2.2	29.80 1.16	87.7 2.6	33.64 0.58	32.5 3.4
May 10.4	70.61 1.82	48.5 1.8	47.66 0.68	48.4 2.4	93.1 5.7	82.1 1.7	28.64 1.42	90.3 2.1	33.06 0.95	35.9 3.1
20.4	68.79 1.91	50.3 1.2	46.98 0.78	50.8 2.0	87.4 6.2	83.8 1.1	27.22 1.62	92.4 1.6	32.11 1.30	39.0 2.5
30.3	66.88 1.97	51.5 0.7	46.20 0.86	52.8 1.5	81.2 6.6	84.9 0.6	25.60 1.77	94.0 1.2	30.81 1.61	41.8 2.4
June 9.3	64.91 1.98	52.2 0.1	45.34 0.92	54.3 1.0	74.6 6.8	85.5 0.1	23.83 1.88	95.2 0.6	29.20 1.89	44.2 2.0
19.3	62.93 1.92	52.3 0.4	44.42 0.96	55.3 0.4	67.8 6.7	85.6 0.6	21.95 1.93	95.8 0.0	27.31 2.11	46.2 1.4
29.2	61.01 1.84	51.9 1.0	43.46 0.96	55.7 0.2	61.1 6.6	85.0 1.1	20.02 1.93	95.8 0.5	25.20 2.28	47.6 1.0
July 9.2	59.17 1.68	50.9 1.5	42.50 0.95	55.5 0.6	54.5 6.2	83.9 1.6	18.09 1.88	95.3 1.0	22.92 2.38	48.6 0.4
19.2	57.49 1.47	49.4 2.0	41.55 0.90	54.9 1.3	48.3 5.7	82.3 2.1	16.21 1.79	94.3 1.6	20.54 2.40	49.0 0.2
29.2	56.02 1.23	47.4 2.4	40.65 0.83	53.6 1.7	42.6 5.1	80.2 2.5	14.42 1.65	92.7 2.1	18.14 2.35	48.8 0.7
Aug. 8.1	54.79 0.94	45.0 2.7	39.82 0.72	51.9 2.2	37.5 4.4	77.7 2.9	12.77 1.48	90.6 2.5	15.79 2.23	48.1 1.3
18.1	53.85 0.60	42.3 3.0	39.10 0.58	49.7 2.5	33.1 3.5	74.8 3.2	11.29 1.29	88.1 2.9	13.56 2.02	46.8 1.3
28.1	53.25 0.24	39.3 3.1	38.52 0.42	47.2 2.8	29.6 2.6	71.6 3.5	10.00 1.04	85.2 3.2	11.54 1.72	45.0 2.3
Sept. 7.1	53.01 0.14	36.2 3.2	38.10 0.24	44.4 3.0	27.0 1.7	68.1 3.7	8.96 0.79	82.0 3.5	9.82 1.37	42.7 2.6
17.0	53.15 0.53	33.0 3.1	37.86 0.04	41.4 3.1	25.3 0.6	64.4 3.8	8.17 0.50	78.5 3.7	8.45 0.95	40.1 2.9
27.0	53.68 0.90	29.9 2.8	37.82 0.17	38.3 3.1	24.7 0.4	60.6 3.8	7.67 0.20	74.8 3.8	7.50 0.47	37.2 3.1
Oct. 7.0	54.58 1.26	27.1 2.6	37.99 0.38	35.2 2.9	25.1 1.5	56.8 3.8	7.47 0.11	71.0 3.8	7.03 0.02	34.1 3.2
16.9	55.84 1.57	24.5 2.1	38.37 0.58	32.3 2.7	26.6 2.6	53.0 3.6	7.58 0.44	67.2 3.8	7.05 0.54	30.9 3.1
26.9	57.41 1.84	22.4 1.6	38.95 0.78	29.6 2.2	29.2 3.5	49.4 3.4	8.02 0.76	63.4 3.6	7.59 1.04	27.8 2.9
Nov. 5.9	59.25 2.04	20.8 1.0	39.73 0.94	27.4 1.8	32.7 4.5	46.0 3.0	8.78 1.08	59.8 3.4	8.63 1.52	24.9 2.6
15.9	61.29 2.16	19.8 0.4	40.67 1.08	25.6 1.2	37.2 5.4	43.0 2.7	9.86 1.38	56.4 3.1	10.15 1.95	22.3 2.2
25.8	63.45 2.22	19.4 0.3	41.75 1.18	24.4 0.6	42.6 6.2	40.3 2.2	11.24 1.64	53.3 2.6	12.10 2.31	20.1 1.7
Dec. 5.8	65.67 2.19	19.7 0.9	42.93 1.23	23.8 0.0	48.8 6.7	38.1 1.6	12.88 1.87	50.7 2.2	14.41 2.59	18.4 1.1
15.8	67.86 2.09	20.6 1.6	44.16 1.26	23.8 0.7	55.5 7.1	36.5 1.0	14.75 2.05	48.5 1.6	17.00 2.79	17.3 0.6
25.8	69.95 1.91	22.2 2.1	45.42 1.22	24.5 1.3	62.6 7.3	35.5 0.4	16.80 2.15	46.9 1.0	19.79 2.90	16.7 0.1
35.7	71.86	24.3	46.64	25.8	69.9	35.1	18.95	45.9	22.69	16.8

FIXED STARS, 1903.

(CONSTANTS OF PARIS CONFERENCE.)

551

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	δ Octantis.			α Apodis.			ρ Octantis.			γ Apodis.			ϵ Ursæ Minoris.		
	Right Ascension.		Declina- tion South.	Right Ascension.		Declina- tion South.	Right Ascension.		Declina- tion South.	Right Ascension.		Declina- tion South.	Right Ascension.		Declina- tion North.
	h m	s	°	h m	s	°	h m	s	°	h m	s	°	h m	s	°
	14 11		-83 13	14 35		-78 37	15 20		-84 08	16 18		-78 40	16 55		+82 11
Jan. 0.9	20.02	2.08	4.6	47.06	1.26	38.7	47.71	2.22	12.8	30.24	1.05	29.0	42.17	0.69	50.4
10.9	22.10	2.12	4.4	48.32	1.31	38.3	49.93	2.38	11.6	31.29	1.17	27.2	42.86	0.96	47.1
20.9	24.22	2.10	4.8	49.63	1.32	38.4	52.31	2.48	10.9	32.46	1.26	25.8	43.82	1.20	44.2
30.8	26.32	2.03	5.8	50.95	1.29	39.1	54.79	2.52	10.8	33.72	1.33	24.9	45.02	1.40	41.8
Feb. 9.8	28.35	1.92	7.3	52.24	1.24	40.4	57.31	2.48	11.2	35.05	1.35	24.5	46.42	1.54	39.8
19.8	30.27	1.76	9.3	53.48	1.15	42.1	59.79	2.40	12.1	36.40	1.35	24.6	47.96	1.62	38.5
Mar. 1.8	32.03	1.56	11.7	54.63	1.05	44.2	62.19	2.26	13.5	37.75	1.32	25.1	49.58	1.64	37.8
11.7	33.59	1.35	14.5	55.68	0.93	46.7	64.45	2.08	15.4	39.07	1.26	26.1	51.22	1.60	37.8
21.7	34.94	1.10	17.6	56.61	0.80	49.5	66.53	1.87	17.7	40.33	1.18	27.6	52.82	1.50	38.4
31.7	36.04	0.84	20.9	57.41	0.64	52.6	68.40	1.61	20.3	41.51	1.08	29.4	54.32	1.35	39.7
Apr. 10.6	36.88	0.57	24.4	58.05	0.50	55.8	70.01	1.34	23.2	42.59	0.97	31.5	55.67	1.17	41.5
20.6	37.45	0.30	27.9	58.55	0.33	59.1	71.35	1.03	26.3	43.56	0.82	33.9	56.84	0.93	43.8
30.6	37.75	0.02	31.4	58.88	0.16	62.4	72.38	0.71	29.5	44.38	0.68	36.6	57.77	0.68	46.4
May 10.6	37.77	0.26	34.8	59.04	0.00	65.7	73.09	0.37	32.8	45.06	0.51	39.4	58.45	0.41	49.4
20.5	37.51	0.53	38.1	59.04	0.17	68.9	73.46	0.03	36.1	45.57	0.34	42.4	58.86	0.13	52.6
30.5	36.98	0.78	41.1	58.87	0.32	71.9	73.49	0.30	39.4	45.91	0.16	45.4	58.99	0.16	55.8
June 9.5	36.20	1.02	43.9	58.55	0.48	74.6	73.19	0.64	42.5	46.07	0.03	48.4	58.83	0.43	59.0
19.5	35.18	1.23	46.3	58.07	0.62	77.1	72.55	0.95	45.3	46.04	0.21	51.2	58.40	0.69	62.1
29.4	33.95	1.40	48.2	57.45	0.74	79.1	71.60	1.24	47.9	45.83	0.38	53.9	57.71	0.93	65.1
July 9.4	32.55	1.54	49.6	56.71	0.84	80.7	70.36	1.49	50.1	45.45	0.55	56.4	56.78	1.15	67.8
19.4	31.01	1.62	50.5	55.87	0.91	81.8	68.87	1.69	51.8	44.90	0.70	58.5	55.63	1.35	70.1
29.3	29.39	1.66	50.9	54.96	0.95	82.4	67.18	1.84	53.1	44.20	0.82	60.3	54.28	1.50	72.0
Aug. 8.3	27.73	1.63	50.8	54.01	0.97	82.5	65.34	1.93	53.8	43.38	0.91	61.6	52.78	1.63	73.5
18.3	26.10	1.55	50.1	53.04	0.94	82.0	63.41	1.95	54.0	42.47	0.98	62.5	51.15	1.72	74.6
28.3	24.55	1.41	48.8	52.10	0.88	81.0	61.46	1.90	53.7	41.49	1.01	62.9	49.43	1.77	75.1
Sept. 7.2	23.14	1.22	47.0	51.22	0.79	79.5	59.56	1.78	52.8	40.48	1.00	62.7	47.66	1.78	75.2
17.2	21.92	0.96	44.7	50.43	0.65	77.5	57.78	1.58	51.3	39.48	0.94	61.9	45.88	1.75	74.7
27.2	20.96	0.66	42.1	49.78	0.48	75.2	56.20	1.31	49.3	38.54	0.84	60.6	44.13	1.68	73.7
Oct. 7.2	20.30	0.34	39.2	49.30	0.29	72.5	54.89	0.97	46.9	37.70	0.71	58.9	42.45	1.57	72.3
17.1	19.96	0.03	36.2	49.01	0.07	69.6	53.92	0.60	44.2	36.99	0.53	56.7	40.88	1.41	70.3
27.1	19.99	0.39	33.1	48.94	0.14	66.6	53.32	0.19	41.2	36.46	0.34	54.2	39.47	1.21	68.0
Nov. 6.1	20.38	0.76	30.0	49.08	0.37	63.6	53.13	0.24	38.1	36.12	0.11	51.4	38.26	0.98	65.2
16.0	21.14	1.09	27.2	49.45	0.59	60.8	53.37	0.67	35.0	36.01	0.11	48.5	37.28	0.72	62.1
26.0	22.23	1.40	24.6	50.04	0.78	58.2	54.04	1.08	32.0	36.12	0.33	45.6	36.56	0.42	58.8
Dec. 6.0	23.63	1.66	22.4	50.82	0.96	55.9	55.12	1.45	29.2	36.45	0.56	42.7	36.14	0.11	55.3
16.0	25.29	1.86	20.7	51.78	1.10	54.1	56.57	1.80	26.8	37.01	0.77	40.0	36.03	0.20	51.7
25.9	27.15	2.00	19.6	52.88	1.21	52.8	58.37	2.07	24.8	37.78	0.94	37.6	36.23	0.51	48.1
35.9	29.15		19.0	54.09		52.0	60.44		23.2	38.72		35.5	36.74		44.7

FIXED STARS, 1903.

(CONSTANTS OF PARIS CONFERENCE.)

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	12 Year Cat. 1879.		λ^2 Octantis.		ν Octantis.		β Octantis.		γ^1 Octantis.	
	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion South.
	h m 20 51	° ' " +80 11	h m 21 35	° ' " -83 09	h m 22 12	° ' " -86 27	h m 22 35	° ' " -81 52	h m 23 46	° ' " -82 32
	"	"	"	"	"	"	"	"	"	"
Jan. 1.2	55.70	39.0	54.34	61.5	53.21	49.7	62.04	96.6	19.06	105.1
	0.68	2.8	0.79	2.9	2.15	2.8	1.01	2.4	1.47	1.6
11.1	55.02	36.2	53.55	58.6	51.06	46.9	61.03	94.2	17.59	103.5
	0.47	3.1	0.50	3.3	1.63	3.1	0.81	2.9	1.32	2.2
21.1	54.55	33.1	53.05	55.3	49.43	43.8	60.22	91.3	16.27	101.3
	0.23	3.3	0.19	3.5	1.07	3.4	0.59	3.2	1.14	2.6
31.1	54.32	29.8	52.86	51.8	48.36	40.4	59.63	88.1	15.13	98.7
	0.02	3.3	0.12	3.6	0.50	3.7	0.35	3.5	0.93	3.1
Feb. 10.0	54.34	26.5	52.98	48.2	47.86	36.7	59.28	84.6	14.20	95.6
	0.26	3.3	0.41	3.6	0.08	3.7	0.11	3.6	0.70	3.3
20.0	54.60	23.2	53.39	44.6	47.94	33.0	59.17	81.0	13.50	92.3
	0.50	3.1	0.70	3.6	0.65	3.8	0.13	3.7	0.46	3.6
Mar. 2.0	55.10	20.1	54.09	41.0	48.59	29.2	59.30	77.3	13.04	88.7
	0.71	2.8	0.97	3.4	1.19	3.7	0.37	3.7	0.21	3.8
12.0	55.81	17.3	55.06	37.6	49.78	25.5	59.67	73.6	12.83	84.9
	0.91	2.4	1.21	3.4	1.70	3.5	0.59	3.6	0.05	3.8
21.9	56.72	14.9	56.27	34.4	51.48	22.0	60.26	70.0	12.88	81.1
	1.06	1.8	1.43	2.9	2.16	3.3	0.81	3.5	0.31	3.8
31.9	57.78	13.1	57.70	31.5	53.64	18.7	61.07	66.5	13.19	77.3
	1.18	1.3	1.61	2.6	2.57	3.0	1.01	3.2	0.55	3.6
Apr. 10.9	58.96	11.8	59.31	28.9	56.21	15.7	62.08	63.3	13.74	73.7
	1.26	0.6	1.76	2.2	2.92	2.7	1.18	2.9	0.78	3.5
20.9	60.22	11.2	61.07	26.7	59.13	13.0	63.26	60.4	14.52	70.2
	1.29	0.6	1.87	1.8	3.21	2.2	1.34	2.6	1.00	3.3
30.8	61.51	11.1	62.94	24.9	62.34	10.8	64.60	57.8	15.52	66.9
	1.29	0.6	1.93	1.3	3.44	1.7	1.43	2.1	1.20	2.9
May 10.8	62.80	11.7	64.89	23.6	65.78	9.1	66.05	55.7	16.72	64.0
	1.24	1.2	1.98	0.8	3.58	1.3	1.56	1.7	1.38	2.5
20.8	64.04	12.9	66.87	22.8	69.36	7.8	67.61	54.0	18.10	61.5
	1.15	1.8	1.98	0.2	3.64	0.7	1.61	1.1	1.52	2.0
30.7	65.19	14.7	68.85	22.6	73.00	7.1	69.22	52.9	19.62	59.5
	1.03	2.2	1.98	0.2	3.63	0.2	1.62	0.6	1.62	1.6
June 9.7	66.22	16.9	70.77	22.8	76.63	6.9	70.84	52.3	21.24	57.9
	0.87	2.7	1.81	0.8	3.53	0.3	1.61	0.1	1.68	1.0
19.7	67.09	19.6	72.58	23.6	80.16	7.2	72.45	52.2	22.92	56.9
	0.71	3.0	1.67	1.3	3.32	0.9	1.55	0.4	1.71	0.5
29.7	67.80	22.6	74.25	24.9	83.48	8.1	74.00	52.6	24.63	56.4
	0.51	3.3	1.47	1.7	3.04	1.4	1.45	1.0	1.68	0.1
July 9.6	68.31	25.9	75.72	26.6	86.52	9.5	75.45	53.6	26.31	56.5
	0.31	3.4	1.23	2.1	2.66	1.8	1.30	1.5	1.61	0.7
19.6	68.62	29.3	76.95	28.7	89.18	11.3	76.75	55.1	27.92	57.2
	0.10	3.6	0.96	2.5	2.21	2.3	1.11	2.0	1.49	1.2
29.6	68.72	32.9	77.91	31.2	91.39	13.6	77.86	57.1	29.41	58.4
	0.11	3.6	0.66	2.7	1.68	2.6	0.90	2.3	1.32	1.7
Aug. 8.6	68.61	36.5	78.57	33.9	93.07	16.2	78.76	59.4	30.73	60.1
	0.31	3.5	0.33	2.9	1.11	2.8	0.66	2.7	1.11	2.2
18.5	68.30	40.0	78.90	36.8	94.18	19.0	79.42	62.1	31.84	62.3
	0.52	3.4	0.00	3.0	0.48	3.0	0.38	2.9	0.86	2.6
28.5	67.78	43.4	78.90	39.8	94.66	22.0	79.80	65.0	32.70	64.9
	0.70	3.3	0.34	3.0	0.17	3.1	0.11	3.0	0.59	2.8
Sept 7.5	67.08	46.7	78.56	42.8	94.49	25.1	79.91	68.0	33.29	67.7
	0.87	2.9	0.66	2.8	0.80	3.0	0.19	3.0	0.29	3.1
17.4	66.21	49.6	77.90	45.6	93.69	28.1	79.72	71.0	33.58	70.8
	1.02	2.6	0.97	2.6	1.43	2.9	0.46	3.0	0.02	3.1
27.4	65.19	52.2	76.93	48.2	92.26	31.0	79.26	74.0	33.56	73.9
	1.15	2.2	1.24	2.2	2.01	2.6	0.73	2.7	0.33	3.1
Oct. 7.4	64.04	54.4	75.69	50.4	90.25	33.6	78.53	76.7	33.23	77.0
	1.24	1.8	1.45	1.8	2.51	2.2	0.96	2.4	0.63	3.0
17.4	62.80	56.2	74.24	52.2	87.74	35.8	77.57	79.1	32.60	80.0
	1.31	1.2	1.61	1.3	2.92	1.7	1.16	2.0	0.91	2.7
27.3	61.49	57.4	72.63	53.5	84.82	37.5	76.41	81.1	31.69	82.7
	1.35	0.7	1.71	0.7	3.22	1.1	1.31	1.5	1.15	2.3
Nov 6.3	60.14	58.1	70.92	54.2	81.60	38.6	75.10	82.6	30.54	85.0
	1.35	0.1	1.74	0.1	3.39	0.5	1.41	1.0	1.34	1.8
16.3	58.79	58.2	69.18	54.3	78.21	39.1	73.69	83.6	29.20	86.8
	1.32	0.4	1.70	0.6	3.43	0.1	1.46	0.3	1.49	1.3
26.3	57.47	57.8	67.48	53.7	74.78	39.0	72.23	83.9	27.71	88.1
	1.24	1.0	1.60	1.2	3.35	0.7	1.44	0.3	1.58	0.6
Dec. 6.2	56.23	56.8	65.88	52.5	71.43	38.3	70.79	83.6	26.13	88.7
	1.14	1.7	1.42	1.7	3.15	1.3	1.38	1.0	1.61	0.1
16.2	55.09	55.1	64.46	50.8	68.28	37.0	69.41	82.6	24.52	88.8
	0.99	2.1	1.22	2.2	2.83	2.0	1.27	1.5	1.60	0.6
26.2	54.10	53.0	63.24	48.6	65.45	35.0	68.14	81.1	22.92	88.2
	0.82	2.6	0.96	2.7	2.41	2.5	1.12	2.2	1.52	1.3
36.1	53.28	50.4	62.28	45.9	63.04	32.5	67.02	78.9	21.40	86.9

ON THE ARRANGEMENT AND USE OF THE AMERICAN EPHEMERIS AND NAUTICAL ALMANAC.

The first half of this Ephemeris, embracing the positions of the Sun and Moon, the distances of the Moon from the center of the Sun, from the centers of the four most conspicuous planets, and from certain fixed stars, together with the ephemerides of the planets Mercury, Venus, Mars, Jupiter, and Saturn, is designed for the special use of navigators. The remainder of the work is intended to meet the wants of astronomers. It contains the ephemerides of Uranus and Neptune, the heliocentric co-ordinates of the seven major planets, the rectangular equatorial co-ordinates of the Sun, the Moon's longitude and latitude, data for the libration of the Moon, the obliquity of the ecliptic, the nutation, the positions of 383 standard stars, the ephemeris for the meridian of Washington, etc.

TIME.

Astronomers make use of three different kinds of time, namely: First, true or apparent solar time; second, mean solar time; third, sidereal time.

True or Apparent Solar Time.—This species of time is called indiscriminately either true solar time or apparent solar time, and is measured by the motion of the true Sun; the length of the day being the interval between two successive transits of the Sun over the same meridian, and the time of day being always the hour angle of the Sun from the meridian. This is the most obvious and natural measure of time, but owing to the obliquity of the ecliptic and the varying motion of the Earth in its orbit, the intervals between successive returns of the Sun to the same meridian are not exactly equal, and consequently ordinary clocks and chronometers can not be regulated to true solar time.

Mean Solar Time.—To avoid the irregularity which would arise from using the true solar day, astronomers have recourse to a mean solar day, whose length is equal to the average of all the true solar days in a year. Just as the true solar day depends upon the motion of the true Sun, so the mean solar day is made to depend upon the motion of an imaginary mean Sun which moves along the equator at a perfectly uniform rate, and whose hour angle from any given meridian is always the mean solar time thereat. Ordinary clocks and watches and the chronometers used by navigators are regulated to this species of time.

Equation of Time.—The imaginary mean Sun is supposed to keep as near the true Sun as is consistent with perfect uniformity of motion, but it is sometimes before and sometimes behind the latter, the greatest difference amounting to rather more than one-quarter of an hour. The interval between the true Sun and the imaginary mean Sun is the equation of time, given on pages I and II of the Calendar for the meridian of Greenwich, and a knowledge of it is necessary for converting true solar time into mean solar time, or vice versa. As the mean Sun is an imaginary body, mean solar time can not be directly observed, but it can be got either from observations of the true Sun by applying to them the correction for the equation of time, or from observations of the stars by means of the sidereal time of mean noon, given on page II of the Calendar for the meridian of Greenwich.

Sidereal Time.—Sidereal time is measured, roughly speaking, by the daily motion of the stars; or in strict accuracy, by the daily motion of that point in the equator from which the true right ascensions of the stars are counted. The point in question is the vernal equinox, and its hour angle is always the sidereal time. Astronomical clocks are usually regulated to sidereal time, and are then called sidereal clocks.

Sidereal Day.—A sidereal day is the interval between two successive transits of the vernal equinox over the same meridian. It is $3^m 55.909^s$ of mean solar time shorter than the mean solar day, the tropical year of 365.242 199 solar days, being divided into 366.242 199 sidereal days, each comprising 24 sidereal hours. The sidereal hours are counted from 0 to 24, commencing with the instant of the passage of the true vernal equinox over the upper meridian, and ending with its return to the same meridian. About March 23 of each year the sidereal clock agrees with the mean-time or ordinary clock, and the former gains on the latter $3^m 56.555^s$ of sidereal time per day, so that at the end of a year it will have gained an entire day, and will again agree with the mean-time clock.

Civil Day.—According to the customs of society, the civil day commences at midnight, and comprises twenty-four hours, which extend to the next following midnight. The hours are counted from 0 to 12 in two series; the first, marked A. M., running from midnight to noon, and the second, marked P. M., running from noon to midnight.

Astronomical Day.—The astronomical day begins at noon on the civil day of the same date. It also comprises twenty-four hours, but they are reckoned from 0 to 24, and run from the noon of one day to that of the next following. Astronomical time as well as civil time may be either apparent or mean, according as it is reckoned from apparent noon or from mean noon.

The civil day begins twelve hours before the astronomical day; therefore the first half of the civil day corresponds to the last half of the preceding astronomical day, and the last half of the civil day coincides with the first half of the astronomical day of the same date. Thus, January 9, 2 o'clock, A. M., civil time, is January 8, 14^h, astronomical time; and January 9, 2 o'clock, P. M., civil time, is also January 9, 2^h, astronomical time. Hence, we have the following rules:

To convert Civil Time into Astronomical Time.—If the civil time is marked A. M., take one from the day and add twelve to the hours, and the result will be the corresponding astronomical time; if the civil time is marked P. M., take away the designation P. M., and the astronomical time will result.

To convert Astronomical Time into Civil Time.—If the astronomical time is less than twelve hours, simply write P. M. after it. If greater than twelve hours, subtract twelve hours from it, mark the result A. M., and add one to the days. For example, October 3, 23 hours astronomical time, is October 4, 11 o'clock, A. M., civil time.

To find Greenwich Time.—Express the longitude from Greenwich in time, and when west, add it to the local time, or when east, subtract it from the local time. The result will be the corresponding Greenwich time; mean or sidereal, according as the local time employed is mean or sidereal. For use with Part I of this Ephemeris, Greenwich mean time is ordinarily required.

PART I—THE EPHEMERIS FOR THE MERIDIAN OF GREENWICH.

Pages 2–217 give data arranged under the heads of the several months, and are therefore designated as the Calendar. Each month covers 18 pages, numbered from I to XVIII, whose contents are as follows:

Page I contains, for Greenwich apparent noon of each day, *The Sun's Apparent Right Ascension and Declination*, and the *Equation of Time*. Adjoining columns contain the differences of these quantities for one hour of apparent time. By multiplying any one of

these differences by the hours and parts of an hour from Greenwich apparent noon, and adding the product to, or subtracting it from, the corresponding quantity at noon, according as that quantity is increasing or decreasing, we obtain the value of the quantity in question for any given Greenwich apparent time. The hourly differences are given for the instant of apparent noon at Greenwich, but, when great accuracy is required, they should be interpolated for half the hours and parts of an hour of the Greenwich apparent time.

The *Equation of Time* given on page I is the mean time of apparent noon, or the hour angle of the mean Sun at that instant. The heading of the column directs how the equation is to be applied to apparent time, or the time given by an observation of the Sun, in order to get mean time. When in the course of the month there is a change from addition to subtraction or the reverse (as in the months of April and June), the two different directions are separated by a line, while a corresponding line below points out the dates between which the change occurs.

The *Sun's Semidiameter* and the *Sidereal Time of Semidiameter Passing Meridian* are also given on page I. The semidiameter is used in reducing the altitude of the upper or lower limb of the Sun to the altitude of the center; and in reducing the angular distance between the limb of the Sun and any other object, to the distance from the center of the Sun. The sidereal time of semidiameter passing the meridian is employed in obtaining the passage of the Sun's center over the wires of a transit instrument, when the passage of one limb only has been observed. The quantity found in this column is to be added to the time of transit of the first, or western, limb; and to be subtracted from the time of transit of the second, or eastern, limb.

This page is chiefly used when the Sun is observed on the meridian, at which instant the local apparent time is $0^h 00^m 00^s$. The longitude from Greenwich expressed in time is then the corresponding Greenwich apparent time, before or after noon according as the longitude is east or west. The longitude of any place is therefore the factor employed in reducing the quantities on this page to apparent noon at that place.

The right ascension of the Sun thus reduced is the sidereal time of local apparent noon, and the difference between that and the clock time of the meridian passage of the Sun is the error of the clock on sidereal time.

The declination of the Sun reduced to the meridian, or apparent noon, of the place, is required in finding the latitude from a meridian altitude of the Sun.

As an example of the use of page I:—

Let the Sun's declination be required at apparent noon, 1903, April 3, at a place whose longitude is $89^\circ 40'$, or $5^h 58^m 40^s$ east from Greenwich:—

Local apparent time	April 3,	^h ^m ^s 00 00 00
Longitude from Greenwich (subtractive)		<u>5 58 40</u>
Greenwich apparent time	April 2,	18 01 20

Reducing the minutes and seconds to decimals of an hour, we find that this moment is 18.022^h after Greenwich apparent noon on April 2, or 5.978^h before Greenwich apparent noon on April 3.

On page 56 of the Ephemeris we find that the change of declination in one hour is:

April 2, at Greenwich apparent noon	+	57.84
April 3, at Greenwich apparent noon	+	57.62
Difference for one day	—	0.22

If great exactness is desired, we find the amount of this hourly difference for the time which is half way between Greenwich noon and the time of observation; that is, for 9 hours

after Greenwich noon of the 2nd, this being half of 18 hours. Nine hours is 0.38 of a day; so the calculation is as follows:

Difference for one hour, April 2	.	.	.	.	57.84
Change for 0.38 of a day or $0.22'' \times 0.38$	.	.	.	.	— 0.08
Difference at 9 hours after noon	.	.	.	.	57.76
$57.76'' \times 18.022 = 1040.9'' = 17' 20.9''$					
Declination at Greenwich noon, April 2	.	.	.	N.	4 34 51.6
Change in 18.022 hours (additive)	.	.	.	.	17 20.9
Sun's declination at time of observation	.	.	.	N.	4 52 12.5

When the time of observation is only a few hours before Greenwich noon, it may be better to count the longitude backward from this nearest noon. Thus, in the example just given, the time is 5.978^h before Greenwich noon of April 3; half this interval is about 0.12 of a day, and the hourly motion for the middle of the interval is 57.65''. Then, we find:—

Declination at Greenwich noon, April 3	.	.	.	N.	4 57 57.1
Product of $57.65'' \times 5.978 = 344.6''$ (subtractive)	.	.	.	.	— 5 44.6
Sun's declination at time of observation	.	.	.	N.	4 52 12.5

It will always be well to make the calculation in both ways, as the agreement of the results affords a useful check on their accuracy. At sea, however, it is ordinarily sufficient to compute the declination to the nearest half minute, and the reduction may then be found by Table 12 of BOWDITCH's *American Practical Navigator*.

Page II contains, for Greenwich mean noon of each day, *The Sun's Apparent Right Ascension and Declination*, the *Equation of Time*, and the *Sidereal Time of Mean Noon*. The changes of these quantities for one hour of mean time are also given, and may be used in reducing them for the longitude, or to any Greenwich mean time. When great precision is required, these changes should be interpolated for half the Greenwich time, as described in explaining the calculation of the declination.

The *Equation of Time* given on page II, is the apparent time of mean noon, and is equivalent to the hour angle of the true Sun at the instant of mean noon. The heading of the column directs how the equation must be applied to mean time in order to obtain apparent time.

The *Sidereal Time of Mean Noon* is the right ascension of the mean Sun at Greenwich mean noon. It may be reduced for the longitude, or to any Greenwich mean time, by using the hourly difference, 9.8565^s; or by Table III appended to this volume, for reducing intervals of mean solar to sidereal time; or by Table 9 of BOWDITCH's *Navigator*.

The right ascensions and declinations on pages I and II are affected both by aberration and nutation, and therefore denote the *apparent* positions of the *true* Sun. Page I is used for observations which depend upon apparent time, as when the Sun is observed on the meridian; while page II is used when the times have been noted by a clock or chronometer regulated to mean time, as is the case in most observations of the Sun out of the meridian.

The Sun's declination is required whenever that body is observed for the purpose of finding latitude, local time, or azimuth, and the equation of time is needed in finding the apparent time when determining the latitude from observations of the Sun out of the meridian.

The sidereal time of mean noon, or right ascension of the mean Sun, is useful in converting mean time to sidereal time. We first find the Greenwich mean time, then the right ascension of the mean Sun for that time, and this being added to the local astronomical mean time will give the sidereal time.

The sidereal time of mean noon, reduced for the longitude of the place, is also used in converting sidereal time to mean time. Subtracting the reduced value from the given sidereal time gives the interval of sidereal time from noon, and that is converted into the required mean time by subtracting from it the corresponding reduction of a sidereal interval to a mean-time interval, taken from Table II appended to this volume, or from Table 8 of BOWDITCH'S *Navigator*. Instead of using Table II, this reduction may be found by multiplying 9.8296^s by the hours and parts of an hour of the sidereal interval from noon.

As examples of the use of page II—

1.—Let the Sun's right ascension and the equation of time be required for 1903, May 22, 9^h 02^m 30^s, A. M., mean time, at a place whose longitude is 100° 10', or 6^h 40^m 40^s, west of Greenwich.

Local astronomical mean time	.	.	.	May 21,	^h ^m ^s 21 02 30
Longitude from Greenwich (additive)	.	.	.	.	6 40 40
Greenwich mean time	.	.	.	May 22,	3 43 10 = 3.7194 ^h

<i>Sun's Right Ascension.</i>			<i>Equation of Time.</i>		
May 22, Greenwich noon	.	^h ^m ^s 3 52 08.63	May 22, Greenwich noon	.	^m ^s 3 36.38 (additive)
H. D. 10.018 ^s × 3.7194	.	+ 0 37.26	H. D. — 0.162 ^s × 3.72	.	— 0.60
		3 52 45.89			3 35.78

In this case the hourly differences interpolated to half the interval, or 1.9^h after noon, have been used. The equation of time is here additive to mean time. Its reduction could have been found by Table 12 of BOWDITCH'S *Navigator*.

2.—If the sidereal time is required for the same date and time, we have:—

May 22, sidereal time (at Greenwich mean noon)	.	.	.	^h ^m ^s 3 55 45.01
Reduction for 3 ^h 43 ^m 10 ^s from Table III, or 9.8565 ^s × 3.7194	.	.	.	+ 0 36.66
Add the local astronomical mean time	.	.	.	21 02 30.00
The required sidereal time is (rejecting 24 ^h)	.	.	.	0 58 51.67

The reduction 0^m 36.66^s could have been found in Table III corresponding to the Greenwich mean time 3^h 43^m 10^s, or by Table 9 of BOWDITCH'S *Navigator*.

3.—On 1903, May 22, A. M., at a place whose longitude is 100° 10' W., suppose the sidereal time to be 0^h 58^m 51.67^s, and that the corresponding mean time is required.

The astronomical day is May 21; the longitude in time, + 6^h 40^m 40^s, or + 6.678^h.

May 21, sidereal time (at Greenwich mean noon)	.	.	.	^h ^m ^s 3 51 48.46
Reduction for 6 ^h 40 ^m 40 ^s from Table III, or 9.8565 ^s × 6.678	.	.	.	+ 1 05.82
The sidereal time of local mean noon	.	.	.	3 52 54.28
The given sidereal time (+ 24 ^h , if necessary for the following subtraction)	.	.	.	24 58 51.67
Subtracting the first from the second gives the sidereal interval from noon	.	.	.	21 05 57.39 = 21.0993 ^h
Reduction for 21 ^h 05 ^m 57.4 ^s from Table II, or — 9.8296 ^s × 21.0993	.	.	.	— 3 27.40
The required astronomical mean time is	.	.	.	May 21, 21 02 29.99

Page III contains, for Greenwich mean noon of each day, *The Sun's True Longitude* and *Latitude*, and the *Logarithm of the Radius Vector of the Earth*. The longitudes of the Sun are the true geometric longitudes, not corrected for aberration. They are given in two columns, headed respectively λ and λ' ; λ representing the Sun's longitude counted from the true equinox of the date; and λ' , the same co-ordinate counted from the mean equinox of January 0.0^d of the Besselian fictitious year. The latitude is referred to the mean ecliptic of the date. Columns of hourly differences are given to facilitate finding the Sun's longitude, or the logarithm of the radius vector, for any hour from noon.

The last column on page III contains the *Mean Time of Sidereal Noon*; that is, the number of hours, minutes, and seconds after Greenwich mean noon when the vernal equinox passes the meridian of Greenwich. It may be reduced to any meridian, or to any Greenwich sidereal time, by using the hourly difference, -9.8296^s to effect the necessary interpolation. The reduction, however, can be taken directly from Table II for reducing intervals of sidereal time to mean solar time, or from Table 8 of BOWDITCH's *Navigator*.

This column may be used in converting sidereal time to mean time, instead of that on page II. As an illustration, let us take Example 3, above.

It is seen in advance that the sum of the mean time of sidereal noon and the given sidereal time is less than 24 hours. Were it more than 24 hours, the mean time of sidereal noon should be taken out for May 20, that is, the preceding astronomical day.

	h	m	s
May 21, the mean time of Greenwich sidereal noon is	20	04	53.61
Reduction for longitude from Table II, or $-9.8296^s \times 6.678$	—	1	05.64
The mean time of local sidereal noon	20	03	47.97
Add the given sidereal time	0	58	51.67 = 0.9810 ^h
The sum is	21	02	39.64
Reduction for 0 ^h 58 ^m 51.67 ^s from Table II, or $-9.8296^s \times 0.9810$	—	0	09.64
The required astronomical mean time	May 21,	21	02 30.00

Page IV contains *The Moon's Semidiameter* and *Equatorial Horizontal Parallax*, for each mean noon and midnight at Greenwich. Columns adjoining those of the horizontal parallax give the change of that quantity in one hour, by means of which it can be reduced to any other Greenwich mean time, in the same way as the Sun's declination and the equation of time in the preceding examples. The sign plus or minus is prefixed to the hourly differences, according as the horizontal parallax is increasing or decreasing.

The reduction of the Moon's semidiameter may be readily found by multiplying the reduction of the horizontal parallax by 0.272, or by simply computing the proportional part.

If, for example, the semidiameter of the Moon is to be taken out for 1903, March 7, 10^h, P. M., Greenwich mean time, we see that the difference of the semidiameters at noon and midnight of March 7 is 3.1"; then,

$$12^h : 10^h = 3.1'' : 2.6'',$$

which is the correction to be added to the semidiameter at noon, because the semidiameter is increasing. The Moon's semidiameter for March 7, 10^h, is therefore 16' 13.1".

The Moon's semidiameter and horizontal parallax are required for all observations of the Moon. When great precision is needed, the hourly differences should be interpolated for half the interval of Greenwich time from noon or midnight, and the horizontal parallax should be corrected for the latitude of the place of observation.

The *Mean Time of the Moon's Upper Transit at Greenwich* and the *Age of the Moon* are also contained on page IV. The time of transit is given to tenths of a minute, and is accompanied by a column of differences for one hour of longitude, by means of which the local time of the Moon's meridian transit may be computed for any other place whose longitude is known. Table 11 of BOWDITCH's *Navigator* furnishes the necessary reduction by simple inspection. The age of the Moon, or the time elapsed since the preceding new Moon, is given to tenths of a day.

Pages V–XII contain *The Moon's Right Ascension* and *Declination* for each day and hour of Greenwich mean time. They are accompanied by columns of differences for one minute, which are also given at each hour. The Greenwich mean time, which is required for taking out these quantities, may either be taken from a well regulated chronometer, or may be obtained by applying the longitude converted into time, to the local mean time of the observer. The right ascension or declination is taken out for the given day and hour of

Greenwich mean time; the *Diff. for 1 Minute* is multiplied by the minutes and parts of a minute of the Greenwich time, and the product is added to or subtracted from the quantity, according as the latter is increasing or decreasing.

Thus, suppose the Moon's right ascension and declination are required for 1903, August 20, 10^h 10^m 30^s, astronomical mean time at Greenwich:—

<i>Right Ascension.</i>			<i>Declination.</i>		
	<i>h</i>	<i>m</i>		<i>°</i>	<i>'</i>
August 20, 10 ^h	8	02	57.23	N.	15 33 42.8
Diff. 2.5666 ^s × 10.5		+	26.95		— 1 07.6
August 20, 10 ^h 10 ^m 30 ^s	8	03	24.18	N.	15 32 35.2

For the sake of precision, the differences here employed have been interpolated for 5.2^m = 0.09^h.

Page XII contains also the *Phases of the Moon* and the dates of the *Moon's Perigee and Apogee*, or least and greatest distances from the Earth.

Pages XIII–XVIII contain the *Lunar Distances*, or the angular distances of the center of the Moon from the center of the Sun, from the centers of the four brighter planets, and from certain fixed stars, as they would appear to an observer at the center of the Earth. They are given for every third hour of Greenwich mean time, and as the reckoning begins at noon, the dates are astronomical. All the distances which can be observed on the same day are grouped together under that date, and the columns are read from left to right, across both pages of the same opening. The letter W. or E. is affixed to the name of the Sun, planet, or star, to indicate whether it is on the west or east side of the Moon.

An observer on the Earth's surface by measuring a lunar distance, correcting it for errors of his instrument and for the semidiameters of the objects, and clearing it from the effects of refraction and parallax, finds the true or geocentric distance; that is, the distance as it would have appeared from the center of the Earth at the moment of observation. By comparing this distance with the corresponding distances given in the Ephemeris, the Greenwich mean time of the observation can be derived.

To lessen the labor of computation, the Ephemeris contains, between every two successive distances, the logarithm of the seconds of time in which the distance changes one second of arc; or, as it is usually called, the *Proportional Logarithm of the Difference*. It is given for the middle instant of the two hours between which it is placed.

For computing the Greenwich time corresponding to a given lunar distance we have the following rule:—

Find in the Almanac the two distances between which the true distance falls; take out the nearer of these, the hours of Greenwich time over it, and the P. L. of Diff. between them.

Find the difference between the true distance and the distance taken from the Almanac; and from the proportional logarithm of this difference, as found in Table 45 of BOWDITCH'S Navigator, subtract the P. L. of Diff. taken from the Almanac.

The result will be the proportional logarithm of an interval of time to be added to the hours of Greenwich time, taken from the Almanac, when the earlier Almanac-distance is used; or to be subtracted from the hours of Greenwich time, when the later Almanac-distance is used.

Another method is, to add the common logarithm of the difference in seconds between the true and the Almanac distances to the P. L. of Diff. of the Almanac; and then the sum will be the common logarithm of the correction to be applied to the hours of Greenwich time. Table 34 of BOWDITCH'S *Navigator* saves the operation of reducing degrees (or hours) and minutes to seconds, and the reverse.

As the P. L. of Diff. in the Ephemeris varies continually, the Greenwich time found by the methods just described may not be sufficiently exact. To correct it for such variation, or second difference, take the difference between the P. L. of Diff. used and the one which

follows it in the Ephemeris (or, more strictly, half the difference of the preceding and following ones). With this difference, and the first correction of the Greenwich time already found, enter Table I, appended to this volume, and take out the corresponding seconds, which are to be added to the approximate Greenwich time when the proportional logarithms in the Ephemeris are decreasing; or subtracted when they are increasing.

Thus the Greenwich mean time of an observation can be ascertained, and if the observer has noted the time of observation by a chronometer, the difference between this chronometer time and the Greenwich mean time will be the error of the chronometer on Greenwich time as found from the lunar distance. In that way lunar distances can be used as a check upon the chronometer, and by a series of them carefully observed on both sides of the Moon, the chronometer error may generally be determined within 20 or 30 seconds.

If the observer has found the local mean time of observation from the observed altitude of one of the bodies, or by a watch regulated to that time by recent observations and corrected for change of longitude in the interval, the difference of this local time and the Greenwich time found from the lunar distance will be his longitude. A longitude derived by this method should always be considered as uncertain by 5' or more.

As an example of finding the Greenwich mean time from a lunar distance, suppose that in 1903, February 13, the corrected distance of the Moon's center from Antares is $80^{\circ} 52'$ —

Corrected distance	80 52 00	
Distance in Ephemeris Feb. 13, VI ^h	81 05 36	P. L. 0.2298
Difference	0 13 36	P. L. 1.1217
	h m s	P. L. 0.8919
Time from VI ^h (<i>after</i>)	0 23 05	
Corr. for 2d Diff., Table I	— 02	
Greenwich mean time Feb. 13	6 23 03	

By a table of common logarithms, or a table of logarithms of small arcs, the reduction of the Greenwich time would be found thus:—

From Ephemeris	P. L. 0.2298
Diff. of distances, $13' 36'' = 816''$	log 2.9117
Red. of Greenwich time, $1385^s = 0^h 23^m 05^s$	log 3.1415

The result is the same as by the previous method.

Pages 218–249 contain the geocentric ephemerides of the seven major planets. The places given are apparent positions; that is, they are referred to the equator and true equinox of the date, and are corrected for aberration. All the data except meridian passage are given for the instant of Greenwich mean noon. The column *Meridian Passage* shows the hour, minute, and tenth of that passage of the planet over the meridian of Greenwich which occurs next after the noon of the date.

The right ascension and declination of a planet are required whenever it is observed for time, latitude, or azimuth. The mode of reducing the ephemeris positions of planets to other instants of Greenwich mean time is the same as that given for the Sun on pages 555–557. The local mean time of meridian passage of any planet, at any place, can be found by dividing the proper daily difference of the ephemeris times by 24, multiplying the quotient by the longitude of the place expressed in hours and fractions, and applying the product with its proper sign to the time of Greenwich passage.

Pages 250–271 contain the heliocentric co-ordinates of the seven major planets, and the logarithms of their distances from the Earth. The heliocentric longitude is reckoned, not from the true equinox, as in the preceding ephemerides, but from the mean equinox of the date. It is, therefore, necessary to apply nutation, if the longitude from the true equinox

is required. The daily motion is given for the instant of Greenwich mean noon. The column *Reduction to Orbit* contains the correction to be applied to the heliocentric longitude in order to obtain the longitude counted along the orbit of the planet. The latter is equal to the distance from the mean equinox to the node, plus the distance from the node to the planet. The heliocentric latitude is counted from the mean ecliptic of the date. The *Logarithm of Radius Vector* is the logarithm of the distance of the center of the planet from that of the Sun, at the Greenwich mean noon whose date is given in the first column. The last two columns give, respectively, the logarithm of the true distance of the center of the planet from that of the Earth, for the Greenwich noon indicated on the left-hand side of the page, and for the time which is midway between that date and the date next below it. In the case of Mercury, this intermediate date is mean midnight of the same day; in the case of Venus and Mars, it is the mean noon of the day immediately following; in the case of Jupiter and Saturn, it is mean noon of the second day following; and in the case of Uranus and Neptune, mean noon of the fourth day following.

Pages 272–279 contain the rectangular co-ordinates of the center of the Sun, referred to the center of the Earth as the origin, and to the true equator and equinox of each date as the plane and point of reference. Each co-ordinate is given both for Greenwich mean noon, and for Greenwich mean midnight of the same day. The columns *Reduc. to Mean Eq'x of Jan. 0.0* give the corrections to be applied to the co-ordinates for noon in order to obtain the corresponding co-ordinates referred to the mean equator and the mean equinox of January 0.0 of the Besselian fictitious year.

Pages 280–283 give for every Greenwich mean noon and midnight the apparent geocentric longitude and latitude of the Moon referred to the true ecliptic and equinox of the date.

Page 284 contains the position of the Moon's equator, the longitude of the Moon's perigee, the mean longitude of the Moon's ascending node, and the Moon's mean longitude.

Page 285 contains the elements of the libration of the Moon, and the Sun's aberration and horizontal parallax. The epochs of greatest libration of the Moon, together with the formulæ for finding the libration in longitude and latitude, are given on page 441. The *Sun's Aberration* is the quantity which is to be applied to the true longitude of the Sun in order to obtain its apparent longitude. The correction being negative shows that the apparent longitude as affected by aberration is always less than the true longitude. The *Sun's Equatorial Horizontal Parallax*, given in the last column, is the angle subtended by the equatorial radius of the Earth, as seen from the center of the Sun.

Pages 286–288 give data for precession and the obliquity of the ecliptic, together with all sensible terms arising from the motions of the equator and ecliptic. To show clearly the relations of these quantities, let

λ = the longitude of any body referred to the true equinox of the date.

λ' = the longitude of the same body referred to the mean equinox of the beginning of the Besselian fictitious year.

ψ_1 = the adopted value of the general precession.

$\delta'\psi$ = the principal term of the nutation in longitude; or, in other words, the correction to be applied to the longitude of a body referred to the mean equinox of date, in order to obtain that longitude as referred to the true equinox, exclusive of short period terms. When the correction is positive, the longitudes referred to the true equinox are greater than those referred to the mean equinox; while the contrary is the case when the correction has a negative sign.

$\delta''\psi$ = the short period terms of nutation in longitude, given on pages 287–288.

ω = the true or apparent obliquity of the ecliptic at the date.

ω' = the mean obliquity of the ecliptic at the beginning of the Besselian fictitious year.

$\delta\omega$ = the principal term of the nutation of the obliquity of the ecliptic; or, in other words, the correction to be applied to the mean obliquity of date in order to find the true or apparent obliquity, exclusive of short period terms. This quantity is tabulated on page 286, and is positive or negative according as the true obliquity is greater or less than the mean obliquity.

$\delta''\omega$ = the short period terms of nutation in obliquity, given on pages 287-288.

τ = the fraction of a year intervening between the instant when the Sun's mean longitude was 280° and the date for which λ or ω is required.

Then

$$\begin{aligned}\lambda &= \lambda' + \tau \psi_1 + \delta'\psi + \delta''\psi \\ \omega &= \omega' - 0.464'' \tau + \delta'\omega + \delta''\omega\end{aligned}$$

Page 286 contains, for each fifth Greenwich mean noon throughout the year, certain quantities which may be described in terms of the above notation as follows: The *Precession in Longitude from 1903.0* $= \tau \psi_1$; the *Nutation in Longitude* $= \delta'\psi$; the *Nutation in Right Ascension* $= (\delta'\psi) \cos \omega'$; the *Nutation in Obliquity* $= \delta'\omega$, and the *Obliquity of the Ecliptic* $= \omega - \delta''\omega$, which is the true inclination of the Earth's equator to the ecliptic, exclusive of the terms depending on the Moon's longitude.

Pages 287-288 contain the values of $\delta''\psi$ and $\delta''\omega$, which are not included in the values of nutation given on page 286.

PART II—THE EPHEMERIS FOR THE MERIDIAN OF WASHINGTON.

Page 290 contains formulæ for reducing the positions of fixed stars, including expressions for the Besselian star-numbers and star-constants, and for the independent star-numbers; the whole based upon the constants of STRUVE and PETERS, and expressed in the notation of BESSEL.

Pages 291-294 contain the logarithms of the *Besselian Star-Numbers*, A, B, C, D , for each Washington mean midnight, with the values of E appended at the bottoms of the pages. These numbers serve to reduce the mean place of a star at the beginning of the Besselian fictitious year to its apparent place at the dates for which the numbers are given, and in ordinary cases four figure logarithms suffice; but where extreme accuracy is desired the logarithms of A, C , and D are sometimes needed to five places of decimals. If used in accordance with the English and French notation, the pair of quantities A and B must be interchanged with the pair C and D ; that is, A must be interchanged with C , and B with D . Along with the solar day, the first column contains the sidereal hour of Washington mean midnight for certain dates, and by interpolation among them it is easy to find the sidereal time for which any set of quantities is given.

The following is an example of the reduction of a star to apparent place by the Besselian star-numbers:—

Computation of the apparent place of 70 Ophiuchi for 1903, September 3, for the upper transit at Washington.

	log a	0.4791	log b	4.8495	log c	6.2061	log d	8.8243*
(Page 293)	log A	9.8686	log B	0.9452	log C	1.2469	log D	0.8383*
	log a'	8.6839	log b'	0.0000	log c'	9.6789	log d'	6.0252
	log $A a$	0.3477	log $B b$	5.7947	log $C c$	7.4530	log $D d$	9.6626
	log $A a'$	8.5525	log $B b'$	0.9452	log $C c'$	0.9258	log $D d'$	6.8635*

<i>Mean Place, 1903.0,</i>	a_0	= 18 00 33.119	δ_0	= + 2 31 18.48
	$A a$	= + 02.227	$A a'$	= + 00.04
	$B b$	= 00.000	$B b'$	= + 08.81
	$C c$	= + 00.003	$C c'$	= + 08.43
	$D d$	= + 00.460	$D d'$	= 00.00
	E	= + 00.001	$\tau \mu'$	= - 00.76
	$\tau \mu$	= + 00.012		

<i>Apparent Place, September 3,</i>	a	= 18 00 35.822	δ	= + 2 31 35.00
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Pages 295-302 contain the *Independent Star-Numbers*, which can frequently be advantageously used instead of the *Besselian Star-Numbers*. These quantities are connected

with those of BESSEL by the relations given on page 290, which also contains the formulæ and precepts for the application of both systems of numbers. In order to use the Besselian numbers, it is necessary to have the values of the star-constants, $a, b, c, d, a', b', c', d'$, while the independent star-numbers render it possible to determine the apparent place of a star without computing these star-constants. Four figure logarithms usually suffice, but where extreme accuracy is desired the logarithms of g and h are needed to five places of decimals, and G and H are needed to one-tenth of a minute of arc. The column τ gives the fraction of a year, counted from the beginning of the Besselian fictitious year to each date.

The following is an example of the reduction of a star to apparent place by the independent star-numbers:—

Computation of the apparent place of 70 Ophiuchi for 1903, September 3, for the upper transit at Washington.

$a_0 = 270.08$		$\delta_0 = + 2.31$	
$G = 30.45$		$G + a_0 = 300.53$	
$H = 111.19$		$H + a_0 = 21.27$	
$\log \frac{1}{r}$ 8.8239	$\log \frac{1}{r}$ 8.8239	$a_0 = 18.00.33.119$	
$\log g$ 1.2366	$\log h$ 1.2777	$f = + 02.271$	
$\log \sin (G + a_0)$ 9.9336 <i>n</i>	$\log \sin (H + a_0)$ 9.5631	$(g) = - 00.043$	
$\log \tan \delta_0$ 8.6430	$\log \sec \delta_0$ 0.0004	$(h) = + 00.462$	
$\log (g)$ 8.6371 <i>n</i>	$\log (h)$ 9.6651	$\tau \mu = + 00.012$	
	<i>Apparent R. A., a =</i>	<i>18 00 35.821</i>	
$\log g$ 1.2366	$\log h$ 1.2777	$\delta_0 = + 2.31.18.48$	
$\log \cos (G + a_0)$ 9.7104	$\log \cos (H + a_0)$ 9.9688	$(g') = + 08.85$	
$\log (g')$ 0.9470	$\log \sin \delta_0$ 8.6426	$(h') = + 00.77$	
	$\log (h')$ 9.8891	$(i) = + 07.66$	
		$\tau \mu' = - 00.76$	
	<i>Apparent Dec., $\delta =$</i>	<i>+ 2 31 35.00</i>	
$\log i$ 0.8843			
$\log \cos \delta_0$ 9.9996			
$\log (i)$ 0.8839			

Page 303 contains for every tenth sidereal day the *Besselian* and *Independent Star-Numbers*, exclusive of all short period terms. They are useful in computing ephemerides of stars, similar to those on pages 324–399, for which constants containing short period terms should not be employed.

Pages 304–311 contain the mean places of three hundred and eighty-three stars, for the beginning of the Besselian fictitious year 1903, or, in other words, for the moment when the Sun's mean longitude is 280° . The annual variations are to be considered as the differential coefficients of each co-ordinate with respect to the time at the beginning of the year.

Pages 312–323 contain the apparent positions of the five circumpolar stars, α, δ and λ Ursæ Minoris, γ Cephei, and σ Octantis, for every upper transit at Washington. The mean solar time of transit is given in the column *Mean Solar Date*, in order that each transit above and below the pole may be readily identified. Suppose, for example, that the transit of Polaris below the pole on January 26 is to be found, and we wish to know whether it precedes or follows the upper transit of the same date. On page 312, we find that the upper transit occurs January 26.2; the lower transit, therefore, occurs January 26.7. But the lower transit following that of July 1 (page 318) does not take place until July 2.3. Hence, the lower transit of July 1 precedes the upper one of the same date. A transit occurring very nearly at noon may also be identified without a computation to ascertain the actual mean date, by simply noting the tenth of a day in the column *Mean Solar Date*.

Pages 324–399 contain, for every tenth upper transit at Washington, the apparent places of 378 stars, being all those given in the list of mean places, except the five circumpolars. The mean solar date in the left hand column of each page gives the day and

tenth of the transit, so that intermediate transits may be readily identified; and to facilitate interpolation, the differences of each co-ordinate are given for every ten days.

Pages 400-407 contain the apparent right ascension and declination of the Sun, both for Washington mean and apparent noon, and the hourly motion of the Sun in these co-ordinates; the equation of time, the semidiameter of the Sun, and the sidereal time of semidiameter passing the meridian, for Washington apparent noon; and lastly, the sidereal time of mean noon. The hours and minutes of right ascension and the degrees and minutes of declination are always made the same for both mean and apparent noon. In cases where they really differ, the minute which would have been numerically larger is diminished by one, and the seconds increased by sixty, so that the sum of the two remains correct. The hourly motions in right ascension and declination are given for the columns headed *Mean Noon*, but may be regarded as having the same values for apparent noon.

The *Equation of Time for Apparent Noon* is the correction to be applied to apparent time in order to obtain mean time. It is, therefore, mean time minus apparent time. Each number as given is the mean time of transit of the Sun's center over the meridian of Washington, counted from the nearest noon. The use of all the quantities is substantially the same as in the *Ephemeris for the Meridian of Greenwich*.

Pages 408-415 contain the right ascension, declination, semidiameter, and parallax of the Moon, at the moment of transit over the meridian of Washington. The mean time given in the second column is that of transit of the Moon's center over this meridian. The differences for one hour of longitude are the amounts by which the local mean times of transit over a meridian one hour west of Washington would exceed those given in the column *Mean Time of Transit*, supposing the rate of change to be uniform and equal to what it is at the instant of transit over the meridian of Washington. The next four columns need no especial explanation, except that the differences for one hour of longitude are computed as if the motion of the Moon in right ascension were uniform, or, in other words, they are differential coefficients corresponding to the instants of Washington transit. By means of them, when second differences are taken into account, the position of the Moon can be computed with great exactness for the moment of transit over any meridian not more than one hour distant from Washington. To obtain the same accuracy for more distant meridians, we may proceed as follows: Let F represent either the *Mean Time of Transit*, the *Right Ascension of Center*, or the *Geocentric Declination of Center*, and let D represent the corresponding *Difference for One Hour of Longitude*. Write down three successive values of F , together with the corresponding values of D , and difference the latter as in the following scheme; where the middle values, F_0 and D_0 , belong to the Washington culmination from which is to be derived the value of F for the culmination on the meridian whose longitude is λ .

Function.	Diff. for 1 Hour of Longitude.	Δ'	Δ''
F_{-1}	D_{-1}		
F_0	D_0	a'	b
F_{+1}	D_{+1}	a''	

Then, for the culmination at the meridian λ

$$F_{\lambda} = F_0 + \lambda D_0 + \frac{\lambda^2}{96} (a' + a'') + \frac{\lambda^3 b}{3456}$$

where λ must be expressed in hours and decimals of an hour, and is to be taken plus or minus according as the longitude from Washington is west or east.

The columns of *Sidereal Time of Semidiameter passing Meridian*, *Geocentric Semidiameter* and *Equatorial Horizontal Parallax*, do not seem to need any explanation, except that they all refer to the moment of transit. The column *Bright Limbs* is given to indicate to the observer which limbs are illuminated. When one limb is full and the terminator is within 0.05" of the opposite limb, both can be well observed, and in such cases both are indicated.

Pages 416-433 contain the geocentric apparent right ascensions and declinations of the seven major planets, together with their horizontal parallaxes, semidiameters, and sidereal times of semidiameters passing the meridian, for the moments of all transits which it is usually desirable to observe over the meridian of Washington. The columns following the dates give the Washington mean times of these transits.

PART III—PHENOMENA.

This part gives the dates of the principal astronomical phenomena of the year, expressed in Washington mean time, except in the case of the eclipses and the data for the rings of Saturn, which are expressed in Greenwich mean time.

Pages 436-440 contain all necessary data respecting the solar and lunar eclipses which occur during the year.

The eclipse-elements are given for the moment of conjunction of the Sun and Moon in right ascension, but the subsequent tables and results are computed from the exact positions of these bodies at the several instants referred to. The times and angles designated as the circumstances of a lunar eclipse remain the same throughout all parts of the earth, and require no explanation beyond a mere statement of the fact that in computing them the geometrical diameter of the Earth's shadow has been augmented in the proportion of 51:50. The principal circumstances of each total and annular solar eclipse are stated on five lines, as follows:—

The line entitled *Eclipse begins* gives the Greenwich mean time at which the Moon's penumbra first touches the Earth, together with the latitude and longitude of the point of contact.

The line entitled *Central eclipse begins* gives the time when the axis of the Moon's shadow first touches the Earth, and the latitude and longitude of the point of contact follow.

The line entitled *Central eclipse at noon* gives the time when the axes of the Earth and of the shadow cone lie in the same plane. The latitude and longitude of the point where the axis of the shadow cone then cuts the Earth's surface follow, and there the eclipse will be central and the Sun will be exactly on the meridian.

The lines entitled *Central eclipse ends* and *Eclipse ends* give respectively the times when and the localities where these events occur, the phenomena being the converse of those denoted by the similar phrases for the beginning.

In the case of partial solar eclipses the axis of the Moon's shadow does not come into contact with the Earth, and the three lines entitled, respectively, *Central eclipse begins*, *Central eclipse at noon*, and *Central eclipse ends* are replaced by a single line entitled *Greatest eclipse*, whereon are given the time when and the latitude and longitude where the eclipse attains its greatest magnitude. The latter phenomenon necessarily occurs with the Sun in the horizon.

Maps of the Eclipses.—The regions in which each eclipse is visible are shown upon the map relating to it, from which may be taken approximately, for any place, both the times of the beginning and ending of the eclipse and its magnitude. The dotted curves show the outlines of the shadow for each hour of Greenwich mean time, and therefore pass through all places where the eclipse begins or ends at the hour indicated. To find the instant of beginning at any place, we determine by inspection between what pair of these curved lines the place is situated. The eclipse will then begin between the corresponding hours of

Greenwich mean time; and the fraction of the hour may be determined by dividing the hour in the same proportion as the space representing it on the map is divided by the place in question. This division may be made a little more exact by allowing for the changes in the spaces as indicated by their varying width. The Greenwich mean time thus found must be reduced to local mean time by applying the longitude.

As an example, suppose we wish to find the times at which the eclipse of 1903, September 20, begins and ends at the place whose latitude is 40° S., and whose longitude is 80° E.

For the beginning we compare the distance of the place from the curves of 15^h and 16^h and find it to correspond to about 5 minutes from the former, thus giving for the approximate time of beginning $15^h 05^m$; for the end we compare the distance of the place from the curves of 17^h and 18^h and find it to be about 33 minutes from the former, thus giving for the approximate time of ending $17^h 33^m$, and both of these results are probably correct to within 3 or 4 minutes. Changing to local mean time we shall have—

		Beginning.			Ending.		
		d	h	m	d	h	m
Greenwich mean time	September	20	15	05	20	17	33
Longitude east			5	20		5	20
Local mean time	September	20	20	25	20	22	53

In the case of total and annular eclipses, a fair estimate of the magnitude of the eclipse at any place may be obtained from the position thereof relatively to the central line and to the limit. On the central line, the eclipse is annular or total, while between the central line and the limit the maximum magnitude of the eclipse is given by the quotient of the distance of the place from the limit divided by the distance of the central line from the limit; the measurements being made upon a line drawn through the place, perpendicularly to the central line.

More Accurate Computations.—A more accurate determination of the phases, as visible at any point of the Earth's surface, may be obtained from the Besselian elements which are given for every ten minutes of Greenwich mean time. Their geometric signification is as follows:

Let us imagine a plane passing through the center of the Earth, perpendicular to the right line joining the centers of the Sun and Moon. This latter line is the axis of the Moon's shadow, and the plane is called the *fundamental plane* or plane of xy . We take the intersection of this plane with that of the Earth's equator as the axis of x , and the center of the Earth as the origin of co-ordinates. The axis of y is perpendicular to that of x , and directed toward the north; x and y are then the co-ordinates of the point in which the axis of the shadow intersects the fundamental plane, and they are here expressed in terms of the Earth's equatorial radius as unity. The angle d , of which the sine and cosine are both given, is the declination of that point of the celestial sphere toward which the axis of the shadow is directed; or, in other words, it is the declination of the center of the Sun as seen from the center of the Moon. The angle μ is the Greenwich hour angle of this same point of the celestial sphere.

The quantities l_1 and l_2 are the radii of the shadow-cones upon the fundamental plane, l_1 corresponding to the penumbra, and l_2 to the umbra, or annulus. The notation is that of CHAUVENET'S *Spherical and Practical Astronomy*, in which l_2 is regarded as positive for an annular, and negative for a total eclipse.

The angles f_1 and f_2 , the tangents of which are given, are the angles which the elements of the respective shadow-cones make with the axis of the shadow; or, they are the semi-angles of the two cones.

In order to facilitate interpolation to any required moment, the logarithms of x' , y' and μ' , which are the changes of x , y , and μ , in one minute of time, are given at the bottom of the table.

The method of computing an eclipse from its Besselian elements is based on the fact that at the moments of beginning and ending the distance of the observer from the axis of the

shadow or penumbra is equal to the radius of the latter at the point of observation. To find this distance and radius we proceed as follows:—

(1) The co-ordinates of the observer, ξ , η , and ζ , together with their variations in one minute, are computed for some assumed moment of Greenwich mean time, as near as practicable to the true time of the required phase.

(2) The co-ordinates x and y of the axis of the shadow, together with their variations in one minute, are taken for the same moment from the tables of elements.

(3) From (1) and (2) the position and motion of the observer relative to the axis of the shadow are found.

(4) The radius of the penumbra or umbra at a distance from the fundamental plane equal to that of the observer is also computed.

(5) Then, assuming the motions to be uniform, we determine the time required for the observer to be brought to a distance from the axis of the shadow equal to this radius.

The formulæ and directions for the several steps in the computation are as follows:—

(1) Find $\rho \cos \varphi'$ and $\rho \sin \varphi'$, which are the geocentric co-ordinates of the station referred to the Earth's equator, ρ being the distance from the center of the Earth, and φ' the geocentric latitude. These co-ordinates may be obtained from geodetic tables, or may be computed from the following table based on CLARKE'S spheroid of 1866, by the formulæ—

$$\rho \cos \varphi' = F \cos \varphi$$

$$\rho \sin \varphi' = \frac{\sin \varphi}{G}$$

φ being, as usual, the geographic latitude.

Table for Computing the Geocentric Co-ordinates of a Place.

φ	Log F.	Log G.
0°	0.00000	0.00295
5	0.00001	0.00294
10	0.00004	0.00291
15	0.00010	0.00285
20	0.00017	0.00278
25	0.00026	0.00269
30	0.00037	0.00258
35	0.00048	0.00247
40	0.00061	0.00234
45	0.00074	0.00221
50	0.00086	0.00209
55	0.00099	0.00196
60	0.00111	0.00184
65	0.00121	0.00174
70	0.00130	0.00165
75	0.00138	0.00157
80	0.00143	0.00152
85	0.00146	0.00149
90	0.00147	0.00147

For the assumed Greenwich mean time of computation, take from the table of elements the values of $\sin d$, $\cos d$, and μ . Then with λ for the longitude west from Greenwich, the co-ordinates of the observer will be—

$$\xi = \rho \cos \varphi' \sin (\mu - \lambda)$$

$$\eta = \rho \sin \varphi' \cos d - \rho \cos \varphi' \sin d \cos (\mu - \lambda) = \eta_1 - \eta_2$$

$$\zeta = \rho \sin \varphi' \sin d + \rho \cos \varphi' \cos d \cos (\mu - \lambda) = \zeta_1 + \zeta_2$$

and their variations in one minute of mean time will be—

$$\xi' = [7.63992] \rho \cos \varphi' \cos (\mu - \lambda)$$

$$\eta' = [7.63992] \rho \cos \varphi' \sin d \sin (\mu - \lambda) = [7.63992] \xi \sin d$$

ζ' is not needed.

(2) For the same assumed moment of Greenwich mean time, take from the tables of elements the co-ordinates x and y of the axis of the shadow together with their variations for one minute, which are equal to one-tenth of the differences of two consecutive numbers. These variations are represented by x' and y' , and their logarithms are given beneath the tables of x and y .

(3) The distance m and position-angle M of the axis of the shadow relatively to the observer, and the relative motions, n and N , are computed by the formulæ—

$$\begin{aligned} m \sin M &= x - \xi \\ m \cos M &= y - \eta \\ n \sin N &= x' - \xi' \\ n \cos N &= y' - \eta' \end{aligned}$$

(4) Both for the shadow and for the penumbra, the radius L at the distance ζ from the fundamental plane is computed by the formula

$$L = l - \zeta \tan f$$

l and f being found from the table of elements, and ζ computed in (1).

(5) If the time chosen for computation is exactly that of the beginning or ending of the eclipse, we shall have

$$m = L$$

But, as this condition will rarely be fulfilled on a first trial, a correction τ to the assumed time is computed thus: Find the angle ϕ from the equation,

$$\sin \phi = \frac{m \sin (M - N)}{L}$$

There will be two values for this angle, of which one will be in the first and the other in the second quadrant when $\sin \phi$ is positive, and one in the third and the other in the fourth quadrant when $\sin \phi$ is negative; but simplicity will be gained by taking only that value of ϕ for which $\cos \phi$ is positive. This value lies between the limits $+90^\circ$ and -90° . The correction τ to the assumed time of beginning or ending of the eclipse will then be found in minutes, from—

$$\tau = - \frac{m \cos (M - N)}{n} \mp \frac{L \cos \phi}{n}$$

where the double sign is to be taken negative for the beginning and positive for the ending.

However, one such pair of values of τ cannot give the times of both beginning and ending with accuracy. To attain that, we must commence the computation by assuming two times, one near the beginning, and the other near the ending of the eclipse; both of which may be derived from the chart with sufficient exactness. The computation for the first assumed time will give a small value of τ which, when applied to the assumed time, will give the beginning of the eclipse nearly correctly, and a large value which will give an inaccurate time of ending. Similarly the computation for the second assumed time will give a small and nearly correct value of τ , for finding the time of ending, and a large and inaccurate negative value for finding the time of beginning. We shall thus deduce two times of each phase, only one of which is to be regarded as approximately correct.

The more accurate times of beginning and ending may now be taken in place of those originally assumed, and the whole computation may be repeated, thus leading to a pair of values of τ , which should be very small and accurate. Such a repetition of the computation will in general be advisable, to guard against accidental numerical errors, but a second

approximation may be obtained without it, by finding a corrected value of τ in accordance with the formulæ—

$$\delta\tau = \mp \frac{\tau(l' + [5.3100] \xi \cos d)}{n \cos \psi} - \frac{[4.9788] \tau^2}{n \cos \psi} [\xi \sin (N \mp \psi) - \eta_2 \cos (N \mp \psi)]$$

$$\tau_0 = \tau + \delta\tau$$

where the double signs are to be taken negative for the beginning of the eclipse and positive for the ending. l' is the variation of l for one minute of time, and its numerical value can be taken by inspection from the table of Besselian elements.

If the resulting values of τ_0 are not greater than fifteen minutes, the corrected times of contact thus obtained will be theoretically exact within less than a second, but the uncertainties of the solar and lunar tables are such that an unavoidable error of several seconds may exist in the prediction. To guard against numerical mistakes it is better, after making this final correction, to repeat the computations so far as to obtain new values of m and L for the corrected times. If these two quantities agree within a unit of the fourth place of decimals, the times employed are generally correct within a second of time. If they differ too widely, the computer must use his own judgment as to making further corrections and computations.

Position-angle of Point of Contact.—The position-angle P , of the point of contact, reckoned from the north point of the Sun's limb toward the east, is found by the formula

$$P = N - \psi \pm 180^\circ \text{ for the beginning,}$$

$$P = N + \psi \quad \text{for the ending,}$$

it being assumed that, in each case, the value of ψ is taken between the limits $\pm 90^\circ$.

Computation of the Solar Eclipse of 1903, March 28, for Peking.

The position of Peking is—

$$\begin{array}{l} \text{Latitude, } \varphi = + 39^\circ 54' 36'' \\ \text{Longitude, } \lambda = -116^\circ 27' 00'' \end{array}$$

and its geocentric co-ordinates are—

$$\begin{array}{l} \rho \sin \varphi' = 9.80491 \\ \rho \cos \varphi' = 9.88544 \end{array}$$

From the Eclipse Charts we find the approximate times of the phases to be—

Beginning March	d	h	m	} Greenwich Mean Time.
Ending	28	11	40	
	28	14	10	
Greenwich Mean Time, T ,	March 28			
		Beginning.	Ending.	
		11 ^h 40 ^m	14 ^h 10 ^m	
	μ	173 40 06	211 10 48	
	λ	-116 27 00	-116 27 00	
	$\mu - \lambda$	290 07 06	327 37 48	
	$\rho \cos \varphi'$	9.88544	9.88544	
	$\sin (\mu - \lambda)$	9.97266 n	9.72867 n	
	$\log \xi$	9.85810 n	9.61411 n	
	ξ	- 0.72127	- 0.41125	
	$\rho \sin \varphi'$	9.80491	9.80491	
	$\cos d$	9.99947	9.99946	
		9.80438	9.80437	

Greenwich Mean Time, T , March 28	Beginning. 11 ^h 40 ^m	Ending. 14 ^h 10 ^m
η_1	+ 0.63736	+ 0.63734
$\rho \cos \varphi'$	9.88544	9.88544
$\sin d$	8.69276	8.69881
$\cos (\mu - \lambda)$	9.53650	9.92665
	<hr/> 8.11470	<hr/> 8.51090
η_2	+ 0.01302	+ 0.03243
$\eta = \eta_1 - \eta_2$	+ 0.62434	+ 0.60491
$\rho \sin \varphi' \sin d$	8.49767	8.50372
ζ_1	+ 0.03145	+ 0.03190
$\rho \cos \varphi' \cos d \cos (\mu - \lambda)$	9.42141	9.81155
ζ_2	+ 0.26388	+ 0.64796
$\zeta = \zeta_1 + \zeta_2$	+ 0.29533	+ 0.67986
const. log	7.63992	7.63992
$\rho \cos \varphi' \cos (\mu - \lambda)$	9.42194	9.81209
	<hr/> log ξ'	<hr/> 7.45201
ξ'	+ 0.001153	+ 0.002831
const. log	7.63992	7.63992
$\xi \sin d$	8.55086 n	8.31292 n
	<hr/> log η'	<hr/> 5.95284 n
η'	- 0.000155	- 0.000090
$x - \xi$	- 0.51761	+ 0.45155
$y - \eta$	- 0.13553	+ 0.29008
$x' - \xi'$	+ 0.007373	+ 0.005698
$y' - \eta'$	+ 0.002864	+ 0.002796
$m \sin M$	9.71400 n	9.65470
$m \cos M$	9.13204 n	9.46252
	<hr/> tan M	<hr/> 0.19218
M	255° 19' 37"	57° 16' 58"
$\sin M$	9.98560 n	9.92498
log m	9.72840	9.72972
$n \sin N$	7.86764	7.75572
$n \cos N$	7.45697	7.44654
	<hr/> tan N	<hr/> 0.30918
N	68° 46' 18"	63° 51' 45"
$\sin N$	9.96948	9.95315
log n	7.89816	7.80257
tan f	7.67053	7.67052
log ζ	9.47031	9.83242
	<hr/> 7.14084	<hr/> 7.50294
$\zeta \tan f$	+ 0.00138	+ 0.00318
l	+ 0.55545	+ 0.55519
	<hr/> L	<hr/> + 0.55201
	+ 0.55407	

Greenwich Mean Time, T ,	March 28	Beginning. 11 ^h 40 ^m	Ending. 14 ^h 10 ^m
$M - N$		186° 33' 19"	353° 25' 13"
$\sin (M - N)$		9.05752 n	9.05913 n
$\log m$		9.72840	9.72972
$\text{colog } L$		0.25644	0.25805
$\sin \psi$		9.04236 n	9.04690 n
ψ		— 6° 19' 46"	— 6° 23' 47"
$\log \frac{m}{n}$		1.83024	1.92715
$\cos (M - N)$		9.99715 n	9.99713
		1.82739 n	1.92428
$-\frac{m}{n} \cos (M - N)$		+ 67.203	— 84.000
$\log L$		9.74356	9.74195
$\cos \psi$		9.99734	9.99728
$\text{colog } n$		2.10184	2.19743
		1.84274	1.93666
$\mp \frac{L \cos \psi}{n}$		— 69.621	+ 86.430
τ		— ^m 2.418	+ ^m 2.430
T		^h 11 40	^h 14 10
$T + \tau$		11 37.582	14 12.430
λ		— 7 45.800	— 7 45.800
Local Mean Time,	March 28 ^d 19 ^h 23.382 ^m		21 ^h 58.230 ^m

No correction is necessary, since the assumed times differ very little from the computed ones.

Therefore we have—

Beginning of the eclipse, March 28^d 19^h 23^m 22.9^s } Local Mean Time.
 End of the eclipse, " 28 21 58 13.8 }

	Beginning.	Ending.
$N \mp \psi$	75 06.1	57 28.0
constant	+180 00.0	0 00.0
Angle of position: P	255 06.1	57 28.0

from the north point of the Sun's disk toward the east for direct image.

Moon's Phases, Libration, etc.—Page 441 gives the Washington mean times of the Moon's phases, apogee, perigee and greatest libration, together with the formulæ for finding the libration in longitude and latitude whenever required.

Mean Places of Stars Occulted During the Year.—Pages 442–445 contain, for the year 1903, the adopted mean places and annual proper motions, applicable to STRUVÉ's precession, of such stars as will be occulted by the Moon, but are not included in the list given on pages 304 to 311. These additional stars are necessary in order to provide each month a sufficient number brighter than the 7.55 magnitude which will be occulted at a distance of more than 25° from the Sun.

Elements of Occultations.—Pages 446–476 give the elements for the prediction of the times of occultations of stars and planets by the Moon during the current year. The system of co-ordinates employed is similar to that already described for eclipses, the fundamental plane passing through the center of the Earth, and being taken perpendicular

to the line joining the star and the center of the Moon, but the cone circumscribing the Moon and star is regarded as a cylinder which intercepts the fundamental plane in a circle having the same linear diameter as the Moon.

In the columns referring to the star, those headed *Red'ns from 1903.0* give the quantities necessary to reduce the mean place of the star at the beginning of 1903 to its apparent place at the time of occultation. These reductions are sufficiently accurate to be definitive.

Under the general head, *At Conjunction in R. A.*, are five columns giving certain quantities for the moment of geocentric conjunction of the Moon and star in right ascension, as follows:—

The *Washington Mean Time* is the moment, T , at which the two bodies are in geocentric conjunction in right ascension. At that moment the co-ordinate x of the axis of the cylinder on the fundamental plane has the value zero. The column *Hour Angle, H* , gives the common geocentric hour-angle of the Moon and star at the same moment, expressed in sidereal time and counted from the meridian of Washington—positive toward the west and negative toward the east. Column Y gives the co-ordinate y of the axis of the cylinder upon the fundamental plane at the same moment. Columns x' and y' give the variations of x and y in one hour of mean time. The linear unit in these columns is the Earth's equatorial radius. The limiting parallels, north and south, show the extreme limits of latitude within which the occultation will be visible.

By the aid of these elements, the Washington mean time of immersion and emersion of a star relatively to the limb of the Moon may be computed for any part of the Earth by a method nearly the same as that already explained for computing eclipses, but somewhat more simple.

Prediction of Occultations for a Given Place.—When it is desired to predict the circumstances of one or more occultations at any place, the first step will be to select them from the general list given in the Ephemeris. The conditions of visibility are:—

1. The limiting parallels in the last columns must include the latitude of the place.
2. The quantity $H - \lambda$, taken without regard to sign, must be less than the semi-diurnal arc of the star by at least one hour. On very rare occasions an emersion might be seen in the east, or an immersion in the west, when this difference is a few minutes less than an hour.
3. The Sun must not be much more than an hour above the horizon at the local mean time $T - \lambda$, unless the star is bright enough to be seen in the day time.

When many occultations are to be selected, the most convenient course will be to write the value of $-\lambda$ on the bottom of a slip of paper, and in passing through the list of occultations, to pause over each one for which condition (1) is fulfilled, and examine by means of the slip whether conditions (2) and (3) are also fulfilled. If either fails, the computer passes on. Sometimes it will be difficult to determine whether $H - \lambda$ or $T - \lambda$ falls within the limits; and in such cases the computer may mark the occultation for trial and leave the decision for the subsequent operations. The whole list can be gone over in less than a day, and it will probably be found that about one-tenth of the occultations are marked for trial.

The next step will be to compute the local times of immersion and emersion from the elements, and to that end let—

T = the instant of geocentric conjunction of Moon and star in right ascension, expressed in Washington mean solar time;

H = the Washington west hour-angle of the two bodies at that moment, expressed in sidereal time;

λ = the longitude west of Washington;

$h_0 = H - \lambda$ = the local sidereal hour-angle of the star at the instant T ;

δ = the star's declination.

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The procedure for each occultation will then be as follows:

(1) The geocentric co-ordinates of the place, $\rho \sin \varphi'$ and $\rho \cos \varphi'$, are to be computed by the formulæ and table given in connection with eclipses on page 567.

The next step will be to find the approximate instant of apparent conjunction of the Moon and star as seen from the place, and that may be deduced from the time of geocentric conjunction by the application of an approximate correction taken from Mr. DOWNES's table, printed in the volumes of the American Ephemeris for 1882 to 1899. This correction must be reckoned in mean solar hours, and will be designated by the symbol t . It will have the same sign as h_0 .

When DOWNES's table is not available, the correction may be computed from the formulæ,

$$\begin{aligned}\xi_0 &= \rho \cos \varphi' \sin h_0 \\ \xi' &= [9.4192] \cos \frac{4}{3} h_0 \\ t &= \frac{\xi_0}{x' - \xi'}\end{aligned}$$

By applying t to the Washington mean time of geocentric conjunction, as given with the elements, we shall have the Washington mean time of local conjunction within a few minutes.

(2) Compute for the instant $T+t$ the following quantities, in which t_0 is the sidereal equivalent of the mean time interval t :

$$\begin{aligned}\xi &= \rho \cos \varphi' \sin (h_0 + t_0) \\ \eta &= \rho \sin \varphi' \cos \delta - \rho \cos \varphi' \sin \delta \cos (h_0 + t_0) = \eta_1 - \eta_2 \\ \xi' &= [9.4192] \rho \cos \varphi' \cos (h_0 + t_0) \\ \eta' &= [9.4192] \rho \cos \varphi' \sin \delta \sin (h_0 + t_0) = [9.4192] \xi \sin \delta \\ x &= x't \\ y &= Y + y't\end{aligned}$$

Compute also m , M , n , N , and ψ from the equations

$$\begin{aligned}m \sin M &= x - \xi \\ m \cos M &= y - \eta \\ n \sin N &= x' - \xi' \\ n \cos N &= y' - \eta' \\ \sin \psi &= [0.5646] m \sin (M - N)\end{aligned}$$

ψ being taken between the limits $\pm 90^\circ$. Finally compute

$$\begin{aligned}\tau &= - \frac{[1.7782]m}{n} \cos (M - N) \mp \frac{[1.2135]}{n} \cos \psi \\ \delta\tau &= \frac{[6.7591]\tau^2}{n \cos \psi} [\eta_2 \cos (N \mp \psi) - \xi \sin (N \mp \psi)]\end{aligned}$$

where the double signs are to be taken negative for an immersion and positive for an emersion. Both τ and $\delta\tau$ thus have two values, which are expressed in minutes of time, and in order to distinguish them let those pertaining to immersion be designated respectively τ' and $\delta\tau'$, while those pertaining to emersion are designated τ'' and $\delta\tau''$. We then have for the Washington mean times of the phases

$$\begin{aligned}\text{Instant of immersion} &= T + t + \tau' + \delta\tau' \\ \text{Instant of emersion} &= T + t + \tau'' + \delta\tau''\end{aligned}$$

These expressions are practically exact, but the corrections $\delta\tau$ seldom amount to so much as 1.5 minutes, and whenever an inaccuracy of that magnitude is permissible they may be omitted. As a check upon the results, it will be advisable to compute ξ , η , x , and

y for the times of immersion and emersion finally obtained. If these times are correct the quantities in question will fulfill the condition,

$$\sqrt{(x - \xi)^2 + (y - \eta)^2} = 0.2725$$

If $\log m \sin (M - N) > 9.4354$, $\sin \psi$ will be numerically greater than unity, and no occultation is to be expected at the given place; but a very small one may occur if the excess of the computed distance over the Moon's semidiameter happens to be within the errors of the ephemerides of the Moon and star.

The position-angle of the line from the Moon's center to the star, at the time of contact, is reckoned from the north point toward the east, and designated by the symbol P . It is found from the formula,

$$\begin{aligned} P &= N - \psi + \delta P && \text{for immersion,} \\ P &= N + \psi + \delta P \pm 180^\circ && \text{for emersion,} \end{aligned}$$

where the angles $N - \psi$ and $N + \psi$ are taken directly from the computation of $\delta\tau$, and δP is got in minutes of arc from the expression

$$\delta P = \mp \frac{[9.0819]\tau^2}{\cos \psi} [\eta_2 \sin N + \xi \cos N]$$

In the latter formula the double sign is to be taken negative for an immersion and positive for an emersion.

The angle from the vertex, V , is also reckoned in the direction from the north toward the east, and is found from the formula,

$$V = P - C$$

where C is computed from the expression

$$\tan C = \frac{\xi + [8.2218]\tau\xi' - [4.9810]\tau^2\xi}{\eta + [8.2218]\tau\eta' + [4.9810]\tau^2\eta_2}$$

The value of τ employed in the latter formula must be so taken as to correspond with the phase for which C is required.

In the volumes of the American Ephemeris for the years 1882 to 1901 instructions are given for constructing three special tables which greatly diminish the labor of computing occultations, but as these tables should contain from 4 700 to 6 300 quantities, and as they would apply only to the place for which they were computed, it will rarely be worth while to undertake the labor of forming them. Those who desire further information on the subject may consult any one of the volumes in question.

As an example of an isolated occultation, we will compute that of θ Aquarii on June 15, 1903, for Albany, whose position is

$$\begin{aligned} \varphi &= + 42^\circ 39' 49.5'' \\ \lambda &= - 0^h 13^m 12.9^s \end{aligned}$$

and whose geocentric co-ordinates are—

$$\begin{aligned} \rho \sin \varphi' &= 9.8288 \\ \rho \cos \varphi' &= 9.8672 \end{aligned}$$

From the elements on page 459, we have

$$\begin{aligned} T &= 14^h 51.1^m \\ H &= - 1^h 47.0^m \end{aligned}$$

and

$$h_0 = H - \lambda = - 1^h 33.8^m$$

From DOWNES's Table, or from the formulæ on page 573, we find the correction, t , to the Washington mean time of geocentric conjunction, T , to be about $- 50^m$; therefore the Washington mean time of apparent conjunction is—

$$T + t = \text{June } 15^d 14^h 01.1^m.$$

$T + t$	June 15 ^d 14 ^h 01.1 ^m
h_0	— 1 33.8
t_0	— 0 50.1
$h_0 + t_0$ (in arc)	— 35° 58'
$\rho \cos \varphi'$	9.8672
$\sin (h_0 + t_0)$	9.7689 n
$\log \xi$	9.6361 n
ξ	— 0.4326
$\rho \sin \varphi'$	9.8288
$\cos \delta$	9.9955
$\log \eta_1$	9.8243
η_1	+ 0.6673
$\rho \cos \varphi'$	9.8672
$\sin \delta$	9.1576 n
$\cos (h_0 + t_0)$	9.9081
$\log \eta_2$	8.9329 n
η_2	— 0.0857
$\eta_1 - \eta_2 = \eta$	+ 0.7530
const. log	9.4192
$\rho \cos \varphi' \cos (h_0 + t_0)$	9.7753
$\log \xi'$	9.1945
ξ'	+ 0.1565
const. log	9.4192
$\xi \sin \delta$	8.7937
$\log \eta'$	8.2129
η'	+ 0.0163
$\log x'$	9.7207
$\log t$	9.9208 n
$\log x$	9.6415 n
x	— 0.4380
$\log y'$	9.2049
$\log y' t$	9.1257 n
$y' t$	— 0.1336
Y	+ 0.6972
y	+ 0.5636

$x - \xi$	— 0.0054
$y - \eta$	— 0.1894
$x' - \xi'$	+ 0.3692
$y' - \eta'$	+ 0.1440
$m \sin M$	7.7324 n
$m \cos M$	9.2774 n
$\tan M$	8.4550
M	181° 38'
$\cos M$	9.9998 n
$\log m$	9.2776
$n \sin N$	9.5673
$n \cos N$	9.1584
$\tan N$	0.4089
N	68° 42'
$\sin N$	9.9693
$\log n$	9.5980
const. log	0.5646
$\log m$	9.2776
$\sin (M - N)$	9.9642
$\sin \psi$	9.8064
ψ	+ 39° 49'
const. log	1.7782
$\log \frac{m}{n}$	9.6796
$\cos (M - N)$	9.5907 n
	1.0485 n
$-\frac{[1.7782]}{n} m \cos (M - N)$	— 11.18
const. log	1.2135
colog n	0.4020
$\cos \psi$	9.8854
	1.5009
$\mp \frac{[1.2135]}{n} \cos \psi$	\mp 31.69
τ for immersion	— 42.87 ^m
τ for emersion	+ 20.51

The computation of $\delta\tau$ for the two contacts is as follows:

	Immersion.	Emersion.
$N \mp \psi$	28° 53'	108° 31'
$\cos (N \mp \psi)$	9.9423	9.5018 n
$\log \eta_2$	8.9329 n	8.9329 n
$\log (1)$	8.8752 n	8.4347
(1)	— 0.0750	+ 0.0272
$\sin (N \mp \psi)$	9.6840	9.9769
$\log \xi$	9.6361 n	9.6361 n
$\log (2)$	9.3201 n	9.6130 n

	Immersion.	Emersion.
(2)	— 0.2090	— 0.4102
(1) — (2)	+ 0.1340	+ 0.4374
log [(1) — (2)]	9.1271	9.6409
const. log	6.7591	6.7591
log τ^2	3.2643	2.6239
colog ($n \cos \psi$)	0.5166	0.5166
log $\delta\tau$	9.6671	9.5405
$\delta\tau$	+ 0.46 ^m	+ 0.35 ^m
$\tau + \delta\tau$	— 42.41	+ 20.86
$T + t$	June 15 14 01.1 ^{d h m}	14 01.1 ^{h m}
Washington Mean Time of Phase,	" 15 13 18.7	14 22.0
λ	— 00 13.2	— 00 13.2
Albany Mean Time,	" 15 13 31.9	14 35.2

To find δP and P :

log η	8.9329 n	log ξ	9.6361 n	(3)	— 0.0798
sin N	9.9693	cos N	9.5604	(4)	— 0.1572
log (3)	8.9022 n	log (4)	9.1965 n	(3) + (4)	— 0.2370

	Immersion.	Emersion.
log [(3) + (4)]	9.3747 n	9.3747 n
const. log	9.0819	9.0819
log τ^2	3.2643	2.6239
colog cos ψ	0.1146	0.1146
log δP	1.8355 n	1.1951 n
δP	— 1° 08'	— 0° 16'
$N \mp \psi$	28 53	108 31
constant	0 00	+180 00
Angle of position:	P 27° 45'	288° 15'

from the north point of the Moon's limb toward the east, for direct image.

Occultations Visible at Washington, pages 477-478.—Here are given in detail all the data necessary for observing every occultation of the general list which is visible at Washington during the current year.

Phenomena of Planets and Satellites, pages 479-513.—These are, for the most part, sufficiently explained in the body of the work, but the following additional explanations may be of service in some cases:—

Disks of Mercury, Venus and Mars, pages 479-481.—The angle θ , needed in reducing meridian observations, is the angle which the arc of the great circle from the planet to the Sun makes with the arc from the planet toward the west, reckoned in the direction west, north, east, south. This position-angle is reckoned from 0° to 360°, as in the measurement of double stars, the planet taking the place of the central star, but its measure is 90° greater than in the case of a double star.

We may also regard θ as expressing the angle which the line of cusps makes with the meridian, the positive direction of the meridian being toward the north, and the positive direction of the line of cusps that in which a person following this line would have the illuminated portion of the disk on his right.

Satellites of Mars, page 482.—This page gives sufficient data for finding the Washington mean times of the greatest eastern and western elongations of the satellites, together with their position-angles and distances from the center of the planet, for all elongations visible at Washington.

Satellites of Jupiter, pages 483–507.—The abbreviations designating the phenomena are explained at the foot of each page; the diagram is on page 483.

Satellites of Saturn, pages 508–511.—The diagram and explanations are given on pages 508 and 509, the Washington mean times of greatest elongations on pages 509 to 511, and the apparent elements of the rings on page 511.

The diagrams and ephemerides of *The Satellites of Uranus* are given on page 512, and those of *The Satellite of Neptune* on page 513.

Phenomena, pages 514–515.—The predicted times of the conjunctions, quadratures, and oppositions of the planets with respect to the Sun are respectively the instants when the longitude of each planet differs from that of the Sun by 0° , $\pm 90^\circ$, or 180° .

For the conjunctions of the planets with the Moon, and with each other, the predicted times are the instants when the two bodies have the same right ascension. The degrees and minutes to the right show the difference of declination at the moment of conjunction.

Positions of Observatories, pages 516–520.—The latest available data have been used in compiling these positions, and many of them have been furnished through the courtesy of the directors of the several observatories in response to a circular issued by this office. The values given for the *Reduction to Geocentric Latitude* and *Log ρ* are based upon Col. A. R. CLARKE'S elements of the terrestrial spheroid, published in 1866, from which we have—

$$\begin{aligned}\log e &= 8.915\ 2515 \\ \varphi' - \varphi &= -11' 40.44'' \sin 2\varphi + 1.19'' \sin 4\varphi \\ \log \rho &= 9.999\ 2645 + 0.000\ 7374 \cos 2\varphi - 0.000\ 0019 \cos 4\varphi\end{aligned}$$

PART IV.—STAR NUMBERS, APPARENT PLACES OF STARS, AND OTHER DATA, BASED ON THE CONSTANTS OF THE PARIS CONFERENCE OF MAY, 1896.

Page 522 contains the formulæ for reducing the positions of the fixed stars and for computing the star numbers, the whole expressed in terms of the notation of BESSEL and the constants of the PARIS CONFERENCE of May, 1896.

Page 523 contains the usual data for precession, nutation, obliquity of the ecliptic, and the Sun's aberration, all of which will be rendered sufficiently clear by the explanations given on pages 561–562 respecting the similar data on pages 285–286.

Pages 524–527 contain the logarithms of the *Besselian Star-Numbers* *A*, *B*, *C*, *D*, for each Washington mean midnight, and pages 528–535 contain the *Independent Star-Numbers* for the same dates; to all of which the explanations given on pages 562–563 apply, except that the formulæ on page 522 must be employed instead of those on page 290.

Pages 536–547 contain the apparent positions of the five circumpolar stars, α , δ , and λ Ursæ Minoris, γ Cephei, and σ Octantis for their upper transit at Washington. The arrangement of the data is the same as on pages 312–323, and consequently the explanations given on page 563 apply here also.

Pages 548–552 contain, for every tenth upper transit at Washington, the apparent places of 25 stars, being all those embraced in the list on pages 304–311 whose declination exceeds $\pm 78^\circ 30'$, except the five circumpolar stars. For stars of less declination than $\pm 78^\circ 30'$ the apparent places derived by using the constants of the PARIS CONFERENCE differ from those derived by using the constants of STRUVE and PETERS by quantities

which never exceed $0.016''$ in right ascension or $0.05''$ in declination, and consequently, throughout that range, the places given on pages 324-399 may be regarded as correct for either set of constants; or, in other words, when using the constants of the PARIS CONFERENCE the positions of all stars not contained in pages 536-552 may be taken with sufficient accuracy from pages 324-399. The explanation on page 563, respecting the data on pages 324-399, applies also to pages 548-552.

Latitude by Observed Altitude of Polaris, page 591.—Table IV, page 591, replaces the Tables A, B, C, D, given as a *Supplement* to the volumes of the Ephemeris for 1874 to 1881, and is intended for use at sea and reconnaissance on land. It is constructed upon the assumption that Polaris has a declination of $+88^{\circ} 47.2'$, and an observed altitude of 45° , and will furnish an approximate value of the latitude, the probable error of which, in so far as the table is concerned, will be a few tenths of a minute of arc.

The directions for using the table are adapted to an assumed right ascension of $1^h 24.6^m$ for Polaris, but somewhat greater accuracy may be insured by substituting the right ascension for the date of observation, from pages 312-323 of this volume.

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APPENDIX.

ON THE CONSTRUCTION OF THE AMERICAN EPHEMERIS AND NAUTICAL ALMANAC FOR 1903.

Among American astronomers there are wide differences of opinion respecting the decisions of the PARIS CONFERENCE of May, 1896, and for that reason it has been thought best to give, in the American Ephemeris for 1903, two wholly distinct sets of constants for precession, nutation, aberration, and mean obliquity of the ecliptic, namely: first, those of STRUVE and PETERS, and second, those adopted by the PARIS CONFERENCE of 1896. Their values for 1903.0 are as follows:

	Struve and Peters.	Paris Conference.
Precession	50.2645"	50.2571"
Nutation	9.2240"	9.21"
Aberration	20.4451"	20.47"
Mean Obliquity . .	23° 27' 06.36"	23° 27' 06.86"

The constants of STRUVE and PETERS are employed in the quantities on pages 286 to 399, and those of the PARIS CONFERENCE in the quantities on pages 522 to 552, and thus everyone is left free to choose between them. For stars distant more than 11° 30' from either pole, the apparent places derived by using the constants of the PARIS CONFERENCE differ from those derived by using the constants of STRUVE and PETERS by quantities which never exceed 0.015" in right ascension, and 0.05" in declination, and consequently throughout that region the star ephemerides given on pages 324 to 399 may be regarded as correct for either set of constants. For the five circumpolar stars, and twenty-five other stars whose declinations exceed $\pm 78^\circ 30'$ two sets of ephemerides are given; one depending upon the constants of STRUVE and PETERS, and the other depending upon the constants of the PARIS CONFERENCE.

The formulæ for the reduction of stars from mean to apparent place, using the constants of STRUVE and PETERS, are given on page 290.

The nutation given on page 286, and used in the Besselian and independent star-numbers, page 303; in f' , pages 295 to 302, and in the ephemerides of the apparent places of the fixed stars for every tenth transit, pages 324 to 399, is computed with the values of A' and B' given on page 290, while the nutation used in the Besselian and independent star-numbers (except f') given on pages 291 to 302 is computed with the values of A and B given on page 290.

In the daily ephemeris of the five circumpolar stars given on pages 312 to 323 the nutation is computed with—

$$\begin{aligned}
 A = & \tau - 0.342\ 53 \sin \Omega \\
 & + 0.004\ 10 \sin 2\Omega \\
 & - 0.025\ 19 \sin 2\odot \\
 & + 0.002\ 93 \sin (\odot + 81^\circ 55') \\
 & + 0.000\ 25 \sin (2\odot - \Omega) \\
 & - 0.000\ 11 \sin (3\odot - \Gamma) \\
 & - 0.000\ 05 \sin 2(\odot - \Omega) \\
 & + 0.000\ 10 \sin 2(\odot - \Gamma'') \\
 & + 0.000\ 09 \sin (2\Gamma'' - \Omega) \\
 & + 0.000\ 05 \cos \Gamma' \\
 & + 0.000\ 04 \sin 2\Gamma' \\
 & - 0.004\ 05 \sin 2\zeta \\
 & + 0.001\ 35 \sin (\zeta - \Gamma')
 \end{aligned}$$

$$\begin{aligned}
 B = & - 9.2240 \cos \Omega \\
 & + 0.0895 \cos 2\Omega \\
 & - 0.5506 \cos 2\odot \\
 & - 0.0092 \cos (\odot + 281^\circ 16') \\
 & - 0.0027 \cos (3\odot - \Gamma) \\
 & + 0.0067 \cos (2\odot - \Omega) \\
 & + 0.0024 \cos (2\Gamma'' - \Omega) \\
 & - 0.0023 \sin \Gamma' \\
 & + 0.0008 \cos 2\Gamma' \\
 & - 0.0885 \cos 2\zeta
 \end{aligned}$$

and the result in right ascension is diminished by the quantity $f - f' = -0.1866'' \sin 2\zeta + 0.0622'' \sin (\zeta - I'')$, which is the same for all stars.

The formulæ for the reduction of stars from mean to apparent place, using the constants of the PARIS CONFERENCE, are given on page 522.

The nutation on page 523 includes only the terms in Ω , 2Ω , L , $2L$, and $3L$. This value of the nutation has been used in all the ephemerides of the Sun, Moon, and planets, in the apparent places of the stars for every tenth transit given on pages 548 to 552, and in f' on pages 528 to 535. The nutation used in the daily ephemerides of the circumpolar stars, pages 536 to 547, is computed with—

$$\begin{aligned}
 A = & \tau - 0.34216 \sin \Omega \\
 & + 0.00415 \sin 2\Omega \\
 & - 0.02495 \sin 2L \\
 & + 0.00218 \sin (L + 75.3^\circ) \\
 & - 0.00097 \sin (3L + 78.7^\circ) \\
 & + 0.00025 \sin (2\odot - \Omega) \\
 & - 0.00005 \sin 2(\odot - \Omega) \\
 & + 0.00010 \sin 2(\odot - I'') \\
 & + 0.00009 \sin (2I'' - \Omega) \\
 & + 0.00005 \cos I'' \\
 & + 0.00004 \sin 2I'' \\
 & - 0.00405 \sin 2\zeta \\
 & + 0.00135 \sin (\zeta - I'') \\
 B = & - 9.2100 \cos \Omega \\
 & + 0.0900 \cos 2\Omega \\
 & - 0.5460 \cos 2L \\
 & - 0.0210 \cos (3L + 78.7^\circ) \\
 & + 0.0090 \cos (L - 78.7^\circ) \\
 & + 0.0067 \cos (2\odot - \Omega) \\
 & + 0.0024 \cos (2I'' - \Omega) \\
 & - 0.0023 \sin I'' \\
 & + 0.0008 \cos 2I'' \\
 & - 0.0885 \cos 2\zeta
 \end{aligned}$$

and the result in right ascension is diminished by the quantity $f - f' = -0.1866'' \sin 2\zeta + 0.0622'' \sin (\zeta - I'')$, which is the same for all stars.

The terms of short period in the nutation given on pages 287 and 288 are included in the values of the star-numbers on pages 524 to 535. They are derived from manuscript tables of A'' and B'' , in accordance with the formulæ—

$$\begin{aligned}
 \delta''\psi &= \text{Nutation in longitude} = A''\psi \\
 \delta''\omega &= \text{Nutation in obliquity} = -B''
 \end{aligned}$$

where ψ = the luni-solar precession = $50.3710''$, and A'' and B'' are respectively the short period terms in the expressions for A and B on page 522. By short period terms are meant all terms involving the Moon's mean longitude.

According to the formulæ on pages 290 and 522, the star constants $a, b, c, d, a', b', c', d'$, are computed for each star from its mean place at the beginning of the year, but if strict accuracy is required they should be computed from the star's mean place at date, and the following second order terms should be added to the usual expressions for the reduction from mean to apparent place, namely—

$$\begin{array}{ll}
 \text{To } a - a_0 & \text{To } \delta - \delta_0 \\
 \left. \begin{aligned} & + 0.000003 \tau^2 \sin a \\ & - 0.000149 \tau^2 \cos a \\ & - 0.0000650 \tau^2 \sin 2a \\ & + 0.0000103 \sin 2\Omega \cos 2a \\ & - 0.0000107 \cos 2\Omega \sin 2a \\ & + 0.0000620 \sin 2\odot \cos 2a \\ & - 0.0000622 \cos 2\odot \sin 2a \end{aligned} \right\} \begin{array}{l} \tan \delta \\ \tan^2 \delta \\ \sec^2 \delta \end{array} & \left. \begin{aligned} & + 0.000975 \tau^2 \sin^2 a \\ & - 0.000023 \cos 2\Omega \\ & - 0.000080 \cos 2\Omega \cos 2a \\ & - 0.000077 \sin 2\Omega \sin 2a \\ & + 0.000040 \cos 2\odot \\ & - 0.000467 \cos 2\odot \cos 2a \\ & - 0.000465 \sin 2\odot \sin 2a \end{aligned} \right\} \tan \delta
 \end{array}$$

To $a - a_0$		To $\delta - \delta_0$
$\left. \begin{aligned} &+ 0.000\ 0513 \sin (\odot + \Omega) \cos 2a \\ &- 0.000\ 0507 \cos (\odot + \Omega) \sin 2a \\ &+ 0.000\ 0097 \sin (\odot - \Omega) \cos 2a \\ &- 0.000\ 0053 \cos (\odot - \Omega) \sin 2a \end{aligned} \right\} \tan \delta \sec \delta$	}	$\left. \begin{aligned} &- 0.000\ 039 \cos (\odot + \Omega) \\ &- 0.000\ 380 \cos (\odot + \Omega) \cos 2a \\ &- 0.000\ 385 \sin (\odot + \Omega) \sin 2a \\ &- 0.000\ 386 \cos (\odot - \Omega) \\ &- 0.000\ 040 \cos (\odot - \Omega) \cos 2a \\ &- 0.000\ 072 \sin (\odot - \Omega) \sin 2a \end{aligned} \right\} \sin \delta \tan \delta$

These terms are negligible for stars whose declination is numerically less than 80° , but in computing the apparent places given in the American Ephemeris they have been applied whenever sensible.

The mean places of 383 stars, pages 304 to 311, are from the new *Catalogue of Fundamental Stars, for the epochs 1875 and 1900, Astronomical Papers of the American Ephemeris*, vol. VIII, part 2, prepared in this office, principally under the direction of Professor NEWCOMB.

The apparent places of Sirius and Procyon are corrected for the effect of orbital motion, as determined from AUWERS' investigations, and tabulated in *Astronomical Papers of the American Ephemeris*, vol. I, pages 297-298. The values of these corrections are—

Year.	Δa	$\Delta \delta$	Sirius.	"	Δa	$\Delta \delta$	Procyon.	"
1903.0	$\Delta a = -0.050$	$\Delta \delta = +1.07$			$\Delta a = +0.027$	$\Delta \delta = -0.97$		
1904.0	$\Delta a = -0.065$	$\Delta \delta = +0.96$			$\Delta a = +0.017$	$\Delta \delta = -1.02$		

The ephemeris of the Sun is constructed from Professor NEWCOMB'S *Tables of the Sun, Astronomical Papers of the American Ephemeris*, vol. VI, part 1.

The adopted value of the mean equatorial horizontal parallax of the Sun is $8.80''$, *Paris Conference, May, 1896*.

The adopted apparent semidiameter of the Sun at the Earth's mean distance is that found by Prof. WM. HARKNESS, from 35 842 meridian observations made at Greenwich, Paris, Washington, Königsberg, Milan, Madras, Dorpat, Modena, and Seeberg, viz., $16' 01.50''$; while in the computation of eclipses the value given by AUWERS in the *Astronomische Nachrichten*, 1891, Bd. 128, S. 367, is employed, viz., $15' 59.63''$.

The Sun's rectangular equatorial co-ordinates are computed from the longitudes and latitudes by the following formulæ:—

$$\begin{aligned} X &= R \cos \lambda \\ Y &= R \sin \lambda \cos \omega - 19.3 R \beta \\ Z &= R \sin \lambda \sin \omega + 44.5 R \beta \end{aligned}$$

The reductions to mean equinox, 1903.0, are computed by the formulæ—

$$\begin{aligned} \Delta X &= + Y \sec \omega \Delta \lambda \sin 1'' \\ \Delta Y &= - X \cos \omega \Delta \lambda \sin 1'' + Z \Delta \omega \sin 1'' + 9.1 \tau R \sin (\lambda + 6^\circ) \\ \Delta Z &= - X \sin \omega \Delta \lambda \sin 1'' - Y \Delta \omega \sin 1'' - 21.0 \tau R \sin (\lambda + 6^\circ) \end{aligned}$$

where the numerical coefficients are in units of the seventh place of decimals and

- R = the Sun's radius vector;
- λ = the Sun's true longitude;
- β = the Sun's true latitude, expressed in seconds of arc;
- ω = the obliquity of the ecliptic;
- $\Delta \lambda$ = the reduction of longitude for precession and nutation from January 0.0 of the Besselian fictitious year;
- $\Delta \omega$ = the reduction of the mean to the apparent obliquity;
- τ = the fraction of the year since January 0.0 of the Besselian fictitious year.

The longitude, latitude and parallax of the Moon are derived from HANSEN's *Tables de la Lune*, London, 1857, the mean longitude being corrected in accordance with Professor NEWCOMB's *Researches on the Motion of the Moon*, Part I, page 268,* and Table XXXIV being replaced by a corrected one.

The semidiameter of the Moon is computed from the Moon's equatorial horizontal parallax, π , by the formula,

$$S = 0.272\,506\,\pi + 1.50''$$

where the constant 0.272 506 is based on data from occultations given by Mr. J. PETERS in the *Astronomische Nachrichten*, 1895, Bd. 138, S. 147; and the constant 1.50'' is added to cover the average effect of irradiation. In the special case where $\pi = 57' 00''$, this formula agrees with Table XXII of HANSEN's *Tables de la Lune*, p. 399, and in all other cases it is believed to be preferable to that table. The irradiation constant, 1.50'', is omitted in the computation of eclipses and occultations.

The ephemerides of Mercury, Venus and Mars are derived from Prof. NEWCOMB's tables of these planets, *Astronomical Papers of the American Ephemeris*, vol. VI, parts 2, 3 and 4.

The ephemerides of Jupiter and Saturn are derived from the tables constructed in this office by Dr. GEORGE W. HILL, *Astronomical Papers of the American Ephemeris*, vol. VII, parts 1 and 2.

The ephemeris of Uranus is derived from Professor NEWCOMB's tables of that planet, published in the *Smithsonian Contributions to Knowledge*, No. 262, 1873, vol. 19. The ephemeris of Neptune is derived from Professor NEWCOMB's tables of that planet, *Astronomical Papers of the American Ephemeris*, vol. VII, part 4.

The semidiameters of the planets are computed from the following values:—

	Semidiameter.	Log Dist.	Authority.
Mercury	3.34	0.00	LE VERRIER, <i>Theory of Mercury</i> .
Venus	8.546 \pm 0.086	0.00	
Mars	2.842 \pm 0.057	0.25	PEIRCE, from the Washington Observations of 1845 and 1846, made with the Mural Circle.
Jupiter (polar)	18.78 \pm 0.067	0.70	
Saturn (polar)	8.77 \pm 0.039	0.95	
Uranus	1.68 \pm 0.3	1.30	
Neptune	1.28	1.48	
Jupiter (equatorial)	20.00	0.70	
Saturn (equatorial)	9.38	0.95	

The elements of eclipses of the Sun and occultations of stars by the Moon are given in accordance with BESSEL's method, the special forms employed being a modification of those developed in CHAUVENET's *Spherical and Practical Astronomy*.

The satellites of Mars are computed from manuscript tables based upon elements deduced by Dr. W. S. HARSHMAN. His elements of Deimos are published in the *Astronomical Journal*, 1894, vol. XIV, p. 147; but those of Phobos are yet in manuscript.

The eclipses of Jupiter's satellites are computed from a *Continuation of DAMOISEAU's Tables*, prepared in this office. The occultations, transits, etc., are computed from WOOLHOUSE's tables, published in the *British Nautical Almanac* for 1835; Table II of each satellite having been adapted to DAMOISEAU's tables.

The fifth satellite of Jupiter is computed from manuscript tables based upon unpublished elements deduced by Mr. J. ROBERTSON from observations by Professor E. E. BARNARD.

The elongations and conjunctions of the six inner satellites of Saturn are computed from manuscript tables prepared in this office by Mr. C. KEITH. These tables are based

* *Astronomical Observations made at the U. S. Naval Observatory Washington, 1875, Appendix II*

upon Prof. A. HALL's elements, as published in the *Washington Observations*, 1883, Appendix I. For Hyperion and Iapetus the elongations and conjunctions are computed from Prof. H. STRUVE's elements as published in *Beobachtungen der Saturnstrabanten*, St. Petersburg, 1898.

The apparent elements of the rings of Saturn are computed from BESSEL's data, except those for the dusky ring, which are based on the observations of Messrs. O. STRUVE, A. HALL, E. E. BARNARD and T. LEWIS, at Pulkowa, Washington, Mt. Hamilton and Greenwich.

The elongations of the satellites of Uranus are computed from the data of Professor NEWCOMB's *Uranian and Neptunian Systems*, *Washington Observations*, 1873, Appendix I.

The elongations of the satellite of Neptune are computed from manuscript tables based upon Prof. A. HALL's elements published in the *Astronomical Journal*, 1898, vol. XIX, p. 65.

The following-named persons were engaged in the preparation of the American Ephemeris and Nautical Almanac for the year 1903:

Assistant to the Director.—Prof. H. D. TODD, U. S. N.

Assistants and Employés.—E. J. LOOMIS, W. S. HARSHMAN, H. B. HEDRICK, H. L. RICE, W. AUHAGEN, E. C. RUEBSAM, J. ROBERTSON, H. G. HODGKINS, J. C. HAMMOND, J. H. ROOT, A. P. AUHAGEN, R. KEITH, R. BUCHANAN, E. B. DAVIS, A. DOOLITTLE, J. MCWILLIAM, H. F. M. HEDRICK, C. E. VAN ORSTRAND, and GEO. B. MERRIMAN.

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TABLE I.

CORRECTION REQUIRED, ON ACCOUNT OF SECOND DIFFERENCES OF THE MOON'S
MOTION, IN FINDING THE GREENWICH TIME CORRESPONDING
TO A CORRECTED LUNAR DISTANCE.

Approximate Interval.		DIFFERENCE OF THE PROPORTIONAL LOGARITHMS IN THE EPHEMERIS.																											
		2	4	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40	42	44	46	48	50	52		
h m	h m	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s		
0 00	3 00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
0 10	2 50	0	0	0	1	1	1	1	1	1	1	1	2	2	2	2	2	2	2	2	3	3	3	3	3	3	3		
0 20	2 40	0	1	1	1	1	2	2	2	2	2	3	3	3	3	4	4	4	4	4	5	5	5	5	6	6	6		
0 30	2 30	0	1	1	2	2	2	2	3	3	3	4	4	5	5	5	6	6	6	7	7	7	8	8	8	9	9		
0 40	2 20	0	1	1	2	2	3	3	3	4	4	5	5	6	6	6	7	7	8	8	9	9	10	10	10	11	11		
0 50	2 10	1	1	2	2	3	3	4	4	5	5	5	6	6	7	7	8	8	9	9	10	10	11	12	12	13	13		
1 00	2 00	1	1	2	2	3	3	4	4	5	6	6	7	7	8	8	9	9	10	10	11	12	12	13	13	14	14		
1 10	1 50	1	1	2	2	3	4	4	5	6	6	7	7	8	9	9	10	10	11	12	12	13	14	14	15	15			
1 20	1 40	1	1	2	3	3	4	4	5	6	7	7	8	9	9	10	10	11	12	12	13	14	14	15	15	16			
1 30	1 30	1	1	2	3	3	4	4	5	6	6	7	8	9	9	10	11	11	12	12	13	14	14	15	16	16			
		DIFFERENCE OF THE PROPORTIONAL LOGARITHMS IN THE EPHEMERIS.																											
		54	56	58	60	62	64	66	68	70	72	74	76	78	80	82	84	86	88	90	92	94	96	98	100				
h m	h m	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s			
0 00	3 00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
0 10	2 50	4	4	4	4	4	4	4	4	5	5	5	5	5	5	5	6	6	6	6	6	6	6	6	6	7			
0 20	2 40	7	7	7	7	8	8	8	8	9	9	9	9	10	10	10	10	11	11	11	11	12	12	12	12	12			
0 30	2 30	9	10	10	10	11	11	12	12	12	13	13	13	14	14	14	14	15	15	16	16	16	17	17	17	17			
0 40	2 20	12	12	13	13	13	14	14	15	15	16	16	16	17	17	18	18	19	19	19	20	20	21	21	21	22			
0 50	2 10	14	14	15	15	16	16	16	17	17	18	19	19	20	20	21	21	22	22	22	23	23	24	24	24	25			
1 00	2 00	15	16	16	17	17	18	18	19	19	20	21	21	22	22	23	23	24	24	25	25	26	27	27	28	28			
1 10	1 50	16	17	17	18	18	19	19	20	21	21	22	22	23	24	24	25	26	26	27	27	28	28	29	29	30			
1 20	1 40	17	17	18	19	19	20	20	21	21	22	23	23	24	25	25	26	27	27	28	28	29	29	30	30	31			
1 30	1 30	17	18	18	19	19	20	21	21	22	23	23	24	24	25	25	26	27	27	28	29	29	30	31	31	31			
		DIFFERENCE OF THE PROPORTIONAL LOGARITHMS IN THE EPHEMERIS.																											
		102	104	106	108	110	112	114	116	118	120	122	124	126	128	130	132	134	136	138									
h m	h m	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s									
0 00	3 00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0									
0 10	2 50	7	7	7	7	7	7	7	8	8	8	8	8	8	8	8	8	8	9	9									
0 20	2 40	13	13	13	13	14	14	14	14	15	15	15	15	15	15	16	16	16	16	17									
0 30	2 30	18	18	18	19	19	19	20	20	20	21	21	21	21	22	22	22	23	23	24									
0 40	2 20	22	22	23	23	24	24	25	25	25	26	26	27	27	28	28	28	29	29	30									
0 50	2 10	26	26	26	27	27	28	29	29	29	30	30	31	31	32	32	33	33	34	34									
1 00	2 00	28	29	29	30	30	31	31	32	33	33	34	34	35	35	36	37	37	38	38									
1 10	1 50	30	31	31	32	32	33	34	34	35	35	36	37	37	38	38	39	39	40	40									
1 20	1 40	31	32	33	33	34	34	35	35	36	37	38	38	39	39	40	41	41	42	42									
1 30	1 30	32	32	33	34	34	35	35	36	36	37	38	39	39	40	40	41	42	42	43									

The correction is to be added to the approximate Greenwich time when the proportional logarithms in the Ephemeris are decreasing, and subtracted when they are increasing.

TABLE II.—SIDEREAL INTO MEAN SOLAR TIME.

585

TO BE SUBTRACTED FROM A SIDEREAL TIME INTERVAL.										
Side- real.	0 ^h	1 ^h	2 ^h	3 ^h	4 ^h	5 ^h	6 ^h	7 ^h	For Seconds.	
m	m s	m s	m s	m s	m s	m s	m s	m s	s	s
0	0 0.000	0 9.830	0 19.659	0 29.489	0 39.318	0 49.148	0 58.977	1 8.807	0	0.000
1	0 0.164	0 9.993	0 19.823	0 29.653	0 39.482	0 49.312	0 59.141	1 8.971	1	0.003
2	0 0.328	0 10.157	0 19.987	0 29.816	0 39.646	0 49.475	0 59.305	1 9.135	2	0.005
3	0 0.491	0 10.321	0 20.151	0 29.980	0 39.810	0 49.639	0 59.469	1 9.298	3	0.008
4	0 0.655	0 10.485	0 20.314	0 30.144	0 39.974	0 49.803	0 59.633	1 9.462	4	0.011
5	0 0.819	0 10.649	0 20.478	0 30.308	0 40.137	0 49.967	0 59.796	1 9.626	5	0.014
6	0 0.983	0 10.813	0 20.642	0 30.472	0 40.301	0 50.131	0 59.960	1 9.790	6	0.016
7	0 1.147	0 10.976	0 20.806	0 30.635	0 40.465	0 50.295	1 0.124	1 9.954	7	0.019
8	0 1.311	0 11.140	0 20.970	0 30.799	0 40.629	0 50.458	1 0.288	1 10.118	8	0.022
9	0 1.474	0 11.304	0 21.134	0 30.963	0 40.793	0 50.622	1 0.452	1 10.281	9	0.025
10	0 1.638	0 11.468	0 21.297	0 31.127	0 40.956	0 50.786	1 0.616	1 10.445	10	0.027
11	0 1.802	0 11.632	0 21.461	0 31.291	0 41.120	0 50.950	1 0.779	1 10.609	11	0.030
12	0 1.966	0 11.795	0 21.625	0 31.455	0 41.284	0 51.114	1 0.943	1 10.773	12	0.033
13	0 2.130	0 11.959	0 21.789	0 31.618	0 41.448	0 51.278	1 1.107	1 10.937	13	0.035
14	0 2.294	0 12.123	0 21.953	0 31.782	0 41.612	0 51.441	1 1.271	1 11.100	14	0.038
15	0 2.457	0 12.287	0 22.117	0 31.946	0 41.776	0 51.605	1 1.435	1 11.264	15	0.041
16	0 2.621	0 12.451	0 22.280	0 32.110	0 41.939	0 51.769	1 1.599	1 11.428	16	0.044
17	0 2.785	0 12.615	0 22.444	0 32.274	0 42.103	0 51.933	1 1.762	1 11.592	17	0.046
18	0 2.949	0 12.778	0 22.608	0 32.438	0 42.267	0 52.097	1 1.926	1 11.756	18	0.049
19	0 3.113	0 12.942	0 22.772	0 32.601	0 42.431	0 52.260	1 2.090	1 11.920	19	0.052
20	0 3.277	0 13.106	0 22.936	0 32.765	0 42.595	0 52.424	1 2.254	1 12.083	20	0.055
21	0 3.440	0 13.270	0 23.099	0 32.929	0 42.759	0 52.588	1 2.418	1 12.247	21	0.057
22	0 3.604	0 13.434	0 23.263	0 33.093	0 42.922	0 52.752	1 2.582	1 12.411	22	0.060
23	0 3.768	0 13.598	0 23.427	0 33.257	0 43.086	0 52.916	1 2.745	1 12.575	23	0.063
24	0 3.932	0 13.761	0 23.591	0 33.420	0 43.250	0 53.080	1 2.909	1 12.739	24	0.066
25	0 4.096	0 13.925	0 23.755	0 33.584	0 43.414	0 53.243	1 3.073	1 12.903	25	0.068
26	0 4.259	0 14.089	0 23.919	0 33.748	0 43.578	0 53.407	1 3.237	1 13.066	26	0.071
27	0 4.423	0 14.253	0 24.082	0 33.912	0 43.742	0 53.571	1 3.401	1 13.230	27	0.074
28	0 4.587	0 14.417	0 24.246	0 34.076	0 43.905	0 53.735	1 3.564	1 13.394	28	0.076
29	0 4.751	0 14.581	0 24.410	0 34.240	0 44.069	0 53.899	1 3.728	1 13.558	29	0.079
30	0 4.915	0 14.744	0 24.574	0 34.403	0 44.233	0 54.063	1 3.892	1 13.722	30	0.082
31	0 5.079	0 14.908	0 24.738	0 34.567	0 44.397	0 54.226	1 4.056	1 13.886	31	0.085
32	0 5.242	0 15.072	0 24.902	0 34.731	0 44.561	0 54.390	1 4.220	1 14.049	32	0.087
33	0 5.406	0 15.236	0 25.065	0 34.895	0 44.724	0 54.554	1 4.384	1 14.213	33	0.090
34	0 5.570	0 15.400	0 25.229	0 35.059	0 44.888	0 54.718	1 4.547	1 14.377	34	0.093
35	0 5.734	0 15.563	0 25.393	0 35.223	0 45.052	0 54.882	1 4.711	1 14.541	35	0.096
36	0 5.898	0 15.727	0 25.557	0 35.386	0 45.216	0 55.046	1 4.875	1 14.705	36	0.098
37	0 6.062	0 15.891	0 25.721	0 35.550	0 45.380	0 55.209	1 5.039	1 14.868	37	0.101
38	0 6.225	0 16.055	0 25.885	0 35.714	0 45.544	0 55.373	1 5.203	1 15.032	38	0.104
39	0 6.389	0 16.219	0 26.048	0 35.878	0 45.707	0 55.537	1 5.367	1 15.196	39	0.106
40	0 6.553	0 16.383	0 26.212	0 36.042	0 45.871	0 55.701	1 5.530	1 15.360	40	0.109
41	0 6.717	0 16.546	0 26.376	0 36.206	0 46.035	0 55.865	1 5.694	1 15.524	41	0.112
42	0 6.881	0 16.710	0 26.540	0 36.369	0 46.199	0 56.028	1 5.858	1 15.688	42	0.115
43	0 7.045	0 16.874	0 26.704	0 36.533	0 46.363	0 56.192	1 6.022	1 15.851	43	0.117
44	0 7.208	0 17.038	0 26.867	0 36.697	0 46.527	0 56.356	1 6.186	1 16.015	44	0.120
45	0 7.372	0 17.202	0 27.031	0 36.861	0 46.690	0 56.520	1 6.350	1 16.179	45	0.123
46	0 7.536	0 17.366	0 27.195	0 37.025	0 46.854	0 56.684	1 6.513	1 16.343	46	0.126
47	0 7.700	0 17.529	0 27.359	0 37.188	0 47.018	0 56.848	1 6.677	1 16.507	47	0.128
48	0 7.864	0 17.693	0 27.523	0 37.352	0 47.182	0 57.011	1 6.841	1 16.671	48	0.131
49	0 8.027	0 17.857	0 27.687	0 37.516	0 47.346	0 57.175	1 7.005	1 16.834	49	0.134
50	0 8.191	0 18.021	0 27.850	0 37.680	0 47.510	0 57.339	1 7.169	1 16.998	50	0.137
51	0 8.355	0 18.185	0 28.014	0 37.844	0 47.673	0 57.503	1 7.332	1 17.162	51	0.139
52	0 8.519	0 18.349	0 28.178	0 38.008	0 47.837	0 57.667	1 7.496	1 17.326	52	0.142
53	0 8.683	0 18.512	0 28.342	0 38.171	0 48.001	0 57.831	1 7.660	1 17.490	53	0.145
54	0 8.847	0 18.676	0 28.506	0 38.335	0 48.165	0 57.994	1 7.824	1 17.654	54	0.147
55	0 9.010	0 18.840	0 28.670	0 38.499	0 48.329	0 58.158	1 7.988	1 17.817	55	0.150
56	0 9.174	0 19.004	0 28.833	0 38.663	0 48.492	0 58.322	1 8.152	1 17.981	56	0.153
57	0 9.338	0 19.168	0 28.997	0 38.827	0 48.656	0 58.486	1 8.315	1 18.145	57	0.156
58	0 9.502	0 19.331	0 29.161	0 38.991	0 48.820	0 58.650	1 8.479	1 18.309	58	0.158
59	0 9.666	0 19.495	0 29.325	0 39.154	0 48.984	0 58.814	1 8.643	1 18.473	59	0.161
Side- real.	0 ^h	1 ^h	2 ^h	3 ^h	4 ^h	5 ^h	6 ^h	7 ^h	For Seconds.	

TABLE II.—SIDEREAL INTO MEAN SOLAR TIME.

TO BE SUBTRACTED FROM A SIDEREAL TIME INTERVAL.									
Side- real.	8 ^h	9 ^h	10 ^h	11 ^h	12 ^h	13 ^h	14 ^h	15 ^h	For Seconds.
m	m s	m s	m s	m s	m s	m s	m s	m s	s s
0	I 18.636	I 28.466	I 38.296	I 48.125	I 57.955	2 7.784	2 17.614	2 27.443	0 0.000
1	I 18.800	I 28.630	I 38.459	I 48.289	I 58.119	2 7.948	2 17.778	2 27.607	1 0.003
2	I 18.964	I 28.794	I 38.623	I 48.453	I 58.282	2 8.112	2 17.941	2 27.771	2 0.005
3	I 19.128	I 28.958	I 38.787	I 48.617	I 58.446	2 8.276	2 18.105	2 27.935	3 0.008
4	I 19.292	I 29.121	I 38.951	I 48.780	I 58.610	2 8.440	2 18.269	2 28.099	4 0.011
5	I 19.456	I 29.285	I 39.115	I 48.944	I 58.774	2 8.603	2 18.433	2 28.263	5 0.014
6	I 19.619	I 29.449	I 39.279	I 49.108	I 58.938	2 8.767	2 18.597	2 28.426	6 0.016
7	I 19.783	I 29.613	I 39.442	I 49.272	I 59.101	2 8.931	2 18.761	2 28.590	7 0.019
8	I 19.947	I 29.777	I 39.606	I 49.436	I 59.265	2 9.095	2 18.924	2 28.754	8 0.022
9	I 20.111	I 29.940	I 39.770	I 49.600	I 59.429	2 9.259	2 19.088	2 28.918	9 0.025
10	I 20.275	I 30.104	I 39.934	I 49.763	I 59.593	2 9.423	2 19.252	2 29.082	10 0.027
11	I 20.439	I 30.268	I 40.098	I 49.927	I 59.757	2 9.586	2 19.416	2 29.245	11 0.030
12	I 20.602	I 30.432	I 40.261	I 50.091	I 59.921	2 9.750	2 19.580	2 29.409	12 0.033
13	I 20.766	I 30.596	I 40.425	I 50.255	2 0.084	2 9.914	2 19.744	2 29.573	13 0.035
14	I 20.930	I 30.760	I 40.589	I 50.419	2 0.248	2 10.078	2 19.907	2 29.737	14 0.038
15	I 21.094	I 30.923	I 40.753	I 50.583	2 0.412	2 10.242	2 20.071	2 29.901	15 0.041
16	I 21.258	I 31.087	I 40.917	I 50.746	2 0.576	2 10.405	2 20.235	2 30.065	16 0.044
17	I 21.422	I 31.251	I 41.081	I 50.910	2 0.740	2 10.569	2 20.399	2 30.228	17 0.046
18	I 21.585	I 31.415	I 41.244	I 51.074	2 0.904	2 10.733	2 20.563	2 30.392	18 0.049
19	I 21.749	I 31.579	I 41.408	I 51.238	2 1.067	2 10.897	2 20.727	2 30.556	19 0.052
20	I 21.913	I 31.743	I 41.572	I 51.402	2 1.231	2 11.061	2 20.890	2 30.720	20 0.055
21	I 22.077	I 31.906	I 41.736	I 51.565	2 1.395	2 11.225	2 21.054	2 30.884	21 0.057
22	I 22.241	I 32.070	I 41.900	I 51.729	2 1.559	2 11.388	2 21.218	2 31.048	22 0.060
23	I 22.404	I 32.234	I 42.064	I 51.893	2 1.723	2 11.552	2 21.382	2 31.211	23 0.063
24	I 22.568	I 32.398	I 42.227	I 52.057	2 1.887	2 11.716	2 21.546	2 31.375	24 0.066
25	I 22.732	I 32.562	I 42.391	I 52.221	2 2.050	2 11.880	2 21.709	2 31.539	25 0.068
26	I 22.896	I 32.726	I 42.555	I 52.385	2 2.214	2 12.044	2 21.873	2 31.703	26 0.071
27	I 23.060	I 32.889	I 42.719	I 52.548	2 2.378	2 12.208	2 22.037	2 31.867	27 0.074
28	I 23.224	I 33.053	I 42.883	I 52.712	2 2.542	2 12.371	2 22.201	2 32.031	28 0.076
29	I 23.387	I 33.217	I 43.047	I 52.876	2 2.706	2 12.535	2 22.365	2 32.194	29 0.079
30	I 23.551	I 33.381	I 43.210	I 53.040	2 2.869	2 12.699	2 22.529	2 32.358	30 0.082
31	I 23.715	I 33.545	I 43.374	I 53.204	2 3.033	2 12.863	2 22.692	2 32.522	31 0.085
32	I 23.879	I 33.708	I 43.538	I 53.368	2 3.197	2 13.027	2 22.856	2 32.686	32 0.087
33	I 24.043	I 33.872	I 43.702	I 53.531	2 3.361	2 13.191	2 23.020	2 32.850	33 0.090
34	I 24.207	I 34.036	I 43.866	I 53.695	2 3.525	2 13.354	2 23.184	2 33.013	34 0.093
35	I 24.370	I 34.200	I 44.029	I 53.859	2 3.689	2 13.518	2 23.348	2 33.177	35 0.096
36	I 24.534	I 34.364	I 44.193	I 54.023	2 3.852	2 13.682	2 23.512	2 33.341	36 0.098
37	I 24.698	I 34.528	I 44.357	I 54.187	2 4.016	2 13.846	2 23.675	2 33.505	37 0.101
38	I 24.862	I 34.691	I 44.521	I 54.351	2 4.180	2 14.010	2 23.839	2 33.669	38 0.104
39	I 25.026	I 34.855	I 44.685	I 54.514	2 4.344	2 14.173	2 24.003	2 33.833	39 0.106
40	I 25.190	I 35.019	I 44.849	I 54.678	2 4.508	2 14.337	2 24.167	2 33.996	40 0.109
41	I 25.353	I 35.183	I 45.012	I 54.842	2 4.672	2 14.501	2 24.331	2 34.160	41 0.112
42	I 25.517	I 35.347	I 45.176	I 55.006	2 4.835	2 14.665	2 24.495	2 34.324	42 0.115
43	I 25.681	I 35.511	I 45.340	I 55.170	2 4.999	2 14.829	2 24.658	2 34.488	43 0.117
44	I 25.845	I 35.674	I 45.504	I 55.333	2 5.163	2 14.993	2 24.822	2 34.652	44 0.120
45	I 26.009	I 35.838	I 45.668	I 55.497	2 5.327	2 15.156	2 24.986	2 34.816	45 0.123
46	I 26.172	I 36.002	I 45.832	I 55.661	2 5.491	2 15.320	2 25.150	2 34.979	46 0.126
47	I 26.336	I 36.166	I 45.995	I 55.825	2 5.655	2 15.484	2 25.314	2 35.143	47 0.128
48	I 26.500	I 36.330	I 46.159	I 55.989	2 5.818	2 15.648	2 25.477	2 35.307	48 0.131
49	I 26.664	I 36.493	I 46.323	I 56.153	2 5.982	2 15.812	2 25.641	2 35.471	49 0.134
50	I 26.828	I 36.657	I 46.487	I 56.316	2 6.146	2 15.976	2 25.805	2 35.635	50 0.137
51	I 26.992	I 36.821	I 46.651	I 56.480	2 6.310	2 16.139	2 25.969	2 35.798	51 0.139
52	I 27.155	I 36.985	I 46.815	I 56.644	2 6.474	2 16.303	2 26.133	2 35.962	52 0.142
53	I 27.319	I 37.149	I 46.978	I 56.808	2 6.637	2 16.467	2 26.297	2 36.126	53 0.145
54	I 27.483	I 37.313	I 47.142	I 56.972	2 6.801	2 16.631	2 26.460	2 36.290	54 0.147
55	I 27.647	I 37.476	I 47.306	I 57.136	2 6.965	2 16.795	2 26.624	2 36.454	55 0.150
56	I 27.811	I 37.640	I 47.470	I 57.299	2 7.129	2 16.959	2 26.788	2 36.618	56 0.153
57	I 27.975	I 37.804	I 47.634	I 57.463	2 7.293	2 17.122	2 26.952	2 36.781	57 0.156
58	I 28.138	I 37.968	I 47.797	I 57.627	2 7.457	2 17.286	2 27.116	2 36.945	58 0.158
59	I 28.302	I 38.132	I 47.961	I 57.791	2 7.620	2 17.450	2 27.280	2 37.109	59 0.161
Side- real.	8 ^h	9 ^h	10 ^h	11 ^h	12 ^h	13 ^h	14 ^h	15 ^h	For Seconds.

TO BE SUBTRACTED FROM A SIDEREAL TIME INTERVAL.									
Side- real.	16 ^h	17 ^h	18 ^h	19 ^h	20 ^h	21 ^h	22 ^h	23 ^h	For Seconds.
m	m s	m s	m s	m s	m s	m s	m s	m s	s s
0	2 37.273	2 47.102	2 56.932	3 6.762	3 16.591	3 26.421	3 36.250	3 46.080	0 0.000
1	2 37.437	2 47.266	2 57.096	3 6.925	3 16.755	3 26.585	3 36.414	3 46.244	1 0.003
2	2 37.601	2 47.430	2 57.260	3 7.089	3 16.919	3 26.748	3 36.578	3 46.407	2 0.005
3	2 37.764	2 47.594	2 57.424	3 7.253	3 17.083	3 26.912	3 36.742	3 46.571	3 0.008
4	2 37.928	2 47.758	2 57.587	3 7.417	3 17.246	3 27.076	3 36.906	3 46.735	4 0.011
5	2 38.092	2 47.922	2 57.751	3 7.581	3 17.410	3 27.240	3 37.069	3 46.899	5 0.014
6	2 38.256	2 48.085	2 57.915	3 7.745	3 17.574	3 27.404	3 37.233	3 47.063	6 0.016
7	2 38.420	2 48.249	2 58.079	3 7.908	3 17.738	3 27.568	3 37.397	3 47.227	7 0.019
8	2 38.584	2 48.413	2 58.243	3 8.072	3 17.902	3 27.731	3 37.561	3 47.390	8 0.022
9	2 38.747	2 48.577	2 58.406	3 8.236	3 18.066	3 27.895	3 37.725	3 47.554	9 0.025
10	2 38.911	2 48.741	2 58.570	3 8.400	3 18.229	3 28.059	3 37.889	3 47.718	10 0.027
11	2 39.075	2 48.905	2 58.734	3 8.564	3 18.393	3 28.223	3 38.052	3 47.882	11 0.030
12	2 39.239	2 49.068	2 58.898	3 8.728	3 18.557	3 28.387	3 38.216	3 48.046	12 0.033
13	2 39.403	2 49.232	2 59.062	3 8.891	3 18.721	3 28.550	3 38.380	3 48.210	13 0.035
14	2 39.566	2 49.396	2 59.226	3 9.055	3 18.885	3 28.714	3 38.544	3 48.373	14 0.038
15	2 39.730	2 49.560	2 59.389	3 9.219	3 19.049	3 28.878	3 38.708	3 48.537	15 0.041
16	2 39.894	2 49.724	2 59.553	3 9.383	3 19.212	3 29.042	3 38.871	3 48.701	16 0.044
17	2 40.058	2 49.888	2 59.717	3 9.547	3 19.376	3 29.206	3 39.035	3 48.865	17 0.046
18	2 40.222	2 50.051	2 59.881	3 9.710	3 19.540	3 29.370	3 39.199	3 49.029	18 0.049
19	2 40.386	2 50.215	3 0.045	3 9.874	3 19.704	3 29.533	3 39.363	3 49.193	19 0.052
20	2 40.549	2 50.379	3 0.209	3 10.038	3 19.868	3 29.697	3 39.527	3 49.356	20 0.055
21	2 40.713	2 50.543	3 0.372	3 10.202	3 20.032	3 29.861	3 39.691	3 49.520	21 0.057
22	2 40.877	2 50.707	3 0.536	3 10.366	3 20.195	3 30.025	3 39.854	3 49.684	22 0.060
23	2 41.041	2 50.870	3 0.700	3 10.530	3 20.359	3 30.189	3 40.018	3 49.848	23 0.063
24	2 41.205	2 51.034	3 0.864	3 10.693	3 20.523	3 30.353	3 40.182	3 50.012	24 0.066
25	2 41.369	2 51.198	3 1.028	3 10.857	3 20.687	3 30.516	3 40.346	3 50.175	25 0.068
26	2 41.532	2 51.362	3 1.192	3 11.021	3 20.851	3 30.680	3 40.510	3 50.339	26 0.071
27	2 41.696	2 51.526	3 1.355	3 11.185	3 21.014	3 30.844	3 40.674	3 50.503	27 0.074
28	2 41.860	2 51.690	3 1.519	3 11.349	3 21.178	3 31.008	3 40.837	3 50.667	28 0.076
29	2 42.024	2 51.853	3 1.683	3 11.513	3 21.342	3 31.172	3 41.001	3 50.831	29 0.079
30	2 42.188	2 52.017	3 1.847	3 11.676	3 21.506	3 31.336	3 41.165	3 50.995	30 0.082
31	2 42.352	2 52.181	3 2.011	3 11.840	3 21.670	3 31.499	3 41.329	3 51.158	31 0.085
32	2 42.515	2 52.345	3 2.174	3 12.004	3 21.834	3 31.663	3 41.493	3 51.322	32 0.087
33	2 42.679	2 52.509	3 2.338	3 12.168	3 21.997	3 31.827	3 41.657	3 51.486	33 0.090
34	2 42.843	2 52.673	3 2.502	3 12.332	3 22.161	3 31.991	3 41.820	3 51.650	34 0.093
35	2 43.007	2 52.836	3 2.666	3 12.496	3 22.325	3 32.155	3 41.984	3 51.814	35 0.096
36	2 43.171	2 53.000	3 2.830	3 12.659	3 22.489	3 32.318	3 42.148	3 51.978	36 0.098
37	2 43.334	2 53.164	3 2.994	3 12.823	3 22.653	3 32.482	3 42.312	3 52.141	37 0.101
38	2 43.498	2 53.328	3 3.157	3 12.987	3 22.817	3 32.646	3 42.476	3 52.305	38 0.104
39	2 43.662	2 53.492	3 3.321	3 13.151	3 22.980	3 32.810	3 42.639	3 52.469	39 0.106
40	2 43.826	2 53.656	3 3.485	3 13.315	3 23.144	3 32.974	3 42.803	3 52.633	40 0.109
41	2 43.990	2 53.819	3 3.649	3 13.478	3 23.308	3 33.138	3 42.967	3 52.797	41 0.112
42	2 44.154	2 53.983	3 3.813	3 13.642	3 23.472	3 33.301	3 43.131	3 52.961	42 0.115
43	2 44.317	2 54.147	3 3.977	3 13.806	3 23.636	3 33.465	3 43.295	3 53.124	43 0.117
44	2 44.481	2 54.311	3 4.140	3 13.970	3 23.800	3 33.629	3 43.459	3 53.288	44 0.120
45	2 44.645	2 54.475	3 4.304	3 14.134	3 23.963	3 33.793	3 43.622	3 53.452	45 0.123
46	2 44.809	2 54.638	3 4.468	3 14.298	3 24.127	3 33.957	3 43.786	3 53.616	46 0.126
47	2 44.973	2 54.802	3 4.632	3 14.461	3 24.291	3 34.121	3 43.950	3 53.780	47 0.128
48	2 45.137	2 54.966	3 4.796	3 14.625	3 24.455	3 34.284	3 44.114	3 53.943	48 0.131
49	2 45.300	2 55.130	3 4.960	3 14.789	3 24.619	3 34.448	3 44.278	3 54.107	49 0.134
50	2 45.464	2 55.294	3 5.123	3 14.953	3 24.782	3 34.612	3 44.442	3 54.271	50 0.137
51	2 45.628	2 55.458	3 5.287	3 15.117	3 24.946	3 34.776	3 44.605	3 54.435	51 0.139
52	2 45.792	2 55.621	3 5.451	3 15.281	3 25.110	3 34.940	3 44.769	3 54.599	52 0.142
53	2 45.956	2 55.785	3 5.615	3 15.444	3 25.274	3 35.104	3 44.933	3 54.763	53 0.145
54	2 46.120	2 55.949	3 5.779	3 15.608	3 25.438	3 35.267	3 45.097	3 54.926	54 0.147
55	2 46.283	2 56.113	3 5.942	3 15.772	3 25.602	3 35.431	3 45.261	3 55.090	55 0.150
56	2 46.447	2 56.277	3 6.106	3 15.936	3 25.765	3 35.595	3 45.425	3 55.254	56 0.153
57	2 46.611	2 56.441	3 6.270	3 16.100	3 25.929	3 35.759	3 45.588	3 55.418	57 0.156
58	2 46.775	2 56.604	3 6.434	3 16.264	3 26.093	3 35.923	3 45.752	3 55.582	58 0.158
59	2 46.939	2 56.768	3 6.598	3 16.427	3 26.257	3 36.086	3 45.916	3 55.746	59 0.161
Side- real.	16 ^h	17 ^h	18 ^h	19 ^h	20 ^h	21 ^h	22 ^h	23 ^h	For Seconds.

TO BE ADDED TO A MEAN TIME INTERVAL.										
Mean Solar.	0 ^h	1 ^h	2 ^h	3 ^h	4 ^h	5 ^h	6 ^h	7 ^h	For Seconds.	
m	m s	m s	m s	m s	m s	m s	m s	m s	s	s
0	0 0.000	0 9.856	0 19.713	0 29.569	0 39.426	0 49.282	0 59.139	1 8.995	0	0.000
1	0 0.164	0 10.021	0 19.877	0 29.734	0 39.590	0 49.447	0 59.303	1 9.160	1	0.003
2	0 0.329	0 10.185	0 20.041	0 29.898	0 39.754	0 49.611	0 59.467	1 9.324	2	0.005
3	0 0.493	0 10.349	0 20.206	0 30.062	0 39.919	0 49.775	0 59.632	1 9.488	3	0.008
4	0 0.657	0 10.514	0 20.370	0 30.227	0 40.083	0 49.939	0 59.796	1 9.652	4	0.011
5	0 0.821	0 10.678	0 20.534	0 30.391	0 40.247	0 50.104	0 59.960	1 9.817	5	0.014
6	0 0.986	0 10.842	0 20.699	0 30.555	0 40.412	0 50.268	1 0.124	1 9.981	6	0.016
7	0 1.150	0 11.006	0 20.863	0 30.719	0 40.576	0 50.432	1 0.289	1 10.145	7	0.019
8	0 1.314	0 11.171	0 21.027	0 30.884	0 40.740	0 50.597	1 0.453	1 10.310	8	0.022
9	0 1.478	0 11.335	0 21.191	0 31.048	0 40.904	0 50.761	1 0.617	1 10.474	9	0.025
10	0 1.643	0 11.499	0 21.356	0 31.212	0 41.069	0 50.925	1 0.782	1 10.638	10	0.027
11	0 1.807	0 11.663	0 21.520	0 31.376	0 41.233	0 51.089	1 0.946	1 10.802	11	0.030
12	0 1.971	0 11.828	0 21.684	0 31.541	0 41.397	0 51.254	1 1.110	1 10.967	12	0.033
13	0 2.136	0 11.992	0 21.849	0 31.705	0 41.561	0 51.418	1 1.274	1 11.131	13	0.036
14	0 2.300	0 12.156	0 22.013	0 31.869	0 41.726	0 51.582	1 1.439	1 11.295	14	0.038
15	0 2.464	0 12.321	0 22.177	0 32.034	0 41.890	0 51.746	1 1.603	1 11.459	15	0.041
16	0 2.628	0 12.485	0 22.341	0 32.198	0 42.054	0 51.911	1 1.767	1 11.624	16	0.044
17	0 2.793	0 12.649	0 22.506	0 32.362	0 42.219	0 52.075	1 1.932	1 11.788	17	0.047
18	0 2.957	0 12.813	0 22.670	0 32.526	0 42.383	0 52.239	1 2.096	1 11.952	18	0.049
19	0 3.121	0 12.978	0 22.834	0 32.691	0 42.547	0 52.404	1 2.260	1 12.117	19	0.052
20	0 3.285	0 13.142	0 22.998	0 32.855	0 42.711	0 52.568	1 2.424	1 12.281	20	0.055
21	0 3.450	0 13.306	0 23.163	0 33.019	0 42.876	0 52.732	1 2.589	1 12.445	21	0.057
22	0 3.614	0 13.471	0 23.327	0 33.183	0 43.040	0 52.896	1 2.753	1 12.609	22	0.060
23	0 3.778	0 13.635	0 23.491	0 33.348	0 43.204	0 53.061	1 2.917	1 12.774	23	0.063
24	0 3.943	0 13.799	0 23.656	0 33.512	0 43.368	0 53.225	1 3.081	1 12.938	24	0.066
25	0 4.107	0 13.963	0 23.820	0 33.676	0 43.533	0 53.389	1 3.246	1 13.102	25	0.068
26	0 4.271	0 14.128	0 23.984	0 33.841	0 43.697	0 53.554	1 3.410	1 13.266	26	0.071
27	0 4.435	0 14.292	0 24.148	0 34.005	0 43.861	0 53.718	1 3.574	1 13.431	27	0.074
28	0 4.600	0 14.456	0 24.313	0 34.169	0 44.026	0 53.882	1 3.739	1 13.595	28	0.077
29	0 4.764	0 14.620	0 24.477	0 34.333	0 44.190	0 54.046	1 3.903	1 13.759	29	0.079
30	0 4.928	0 14.785	0 24.641	0 34.498	0 44.354	0 54.211	1 4.067	1 13.924	30	0.082
31	0 5.093	0 14.949	0 24.805	0 34.662	0 44.518	0 54.375	1 4.231	1 14.088	31	0.085
32	0 5.257	0 15.113	0 24.970	0 34.826	0 44.683	0 54.539	1 4.396	1 14.252	32	0.088
33	0 5.421	0 15.278	0 25.134	0 34.990	0 44.847	0 54.703	1 4.560	1 14.416	33	0.090
34	0 5.585	0 15.442	0 25.298	0 35.155	0 45.011	0 54.868	1 4.724	1 14.581	34	0.093
35	0 5.750	0 15.606	0 25.463	0 35.319	0 45.176	0 55.032	1 4.888	1 14.745	35	0.096
36	0 5.914	0 15.770	0 25.627	0 35.483	0 45.340	0 55.196	1 5.053	1 14.909	36	0.099
37	0 6.078	0 15.935	0 25.791	0 35.648	0 45.504	0 55.361	1 5.217	1 15.073	37	0.101
38	0 6.242	0 16.099	0 25.955	0 35.812	0 45.668	0 55.525	1 5.381	1 15.238	38	0.104
39	0 6.407	0 16.263	0 26.120	0 35.976	0 45.833	0 55.689	1 5.546	1 15.402	39	0.107
40	0 6.571	0 16.427	0 26.284	0 36.140	0 45.997	0 55.853	1 5.710	1 15.566	40	0.110
41	0 6.735	0 16.592	0 26.448	0 36.305	0 46.161	0 56.018	1 5.874	1 15.731	41	0.112
42	0 6.900	0 16.756	0 26.612	0 36.469	0 46.325	0 56.182	1 6.038	1 15.895	42	0.115
43	0 7.064	0 16.920	0 26.777	0 36.633	0 46.490	0 56.346	1 6.203	1 16.059	43	0.118
44	0 7.228	0 17.085	0 26.941	0 36.798	0 46.654	0 56.510	1 6.367	1 16.223	44	0.120
45	0 7.392	0 17.249	0 27.105	0 36.962	0 46.818	0 56.675	1 6.531	1 16.388	45	0.123
46	0 7.557	0 17.413	0 27.270	0 37.126	0 46.983	0 56.839	1 6.695	1 16.552	46	0.126
47	0 7.721	0 17.577	0 27.434	0 37.290	0 47.147	0 57.003	1 6.860	1 16.716	47	0.129
48	0 7.885	0 17.742	0 27.598	0 37.455	0 47.311	0 57.168	1 7.024	1 16.881	48	0.131
49	0 8.049	0 17.906	0 27.762	0 37.619	0 47.475	0 57.332	1 7.188	1 17.045	49	0.134
50	0 8.214	0 18.070	0 27.927	0 37.783	0 47.640	0 57.496	1 7.353	1 17.209	50	0.137
51	0 8.378	0 18.234	0 28.091	0 37.947	0 47.804	0 57.660	1 7.517	1 17.373	51	0.140
52	0 8.542	0 18.399	0 28.255	0 38.112	0 47.968	0 57.825	1 7.681	1 17.538	52	0.142
53	0 8.707	0 18.563	0 28.420	0 38.276	0 48.132	0 57.989	1 7.845	1 17.702	53	0.145
54	0 8.871	0 18.727	0 28.584	0 38.440	0 48.297	0 58.153	1 8.010	1 17.866	54	0.148
55	0 9.035	0 18.892	0 28.748	0 38.605	0 48.461	0 58.317	1 8.174	1 18.030	55	0.151
56	0 9.199	0 19.056	0 28.912	0 38.769	0 48.625	0 58.482	1 8.338	1 18.195	56	0.153
57	0 9.364	0 19.220	0 29.077	0 38.933	0 48.790	0 58.646	1 8.502	1 18.359	57	0.156
58	0 9.528	0 19.384	0 29.241	0 39.097	0 48.954	0 58.810	1 8.667	1 18.523	58	0.159
59	0 9.692	0 19.549	0 29.405	0 39.262	0 49.118	0 58.975	1 8.831	1 18.688	59	0.162
Mean Solar.	0 ^h	1 ^h	2 ^h	3 ^h	4 ^h	5 ^h	6 ^h	7 ^h	For Seconds.	

TABLE III.—MEAN SOLAR INTO SIDEREAL TIME.

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TO BE ADDED TO A MEAN TIME INTERVAL.										
Mean Solar.	8 ^h	9 ^h	10 ^h	11 ^h	12 ^h	13 ^h	14 ^h	15 ^h	For Seconds.	
m	m s	m s	m s	m s	m s	m s	m s	m s	s	s
0	18.852	28.708	38.565	48.421	58.278	8.134	17.991	27.847	0	0.000
1	19.016	28.873	38.729	48.585	58.442	8.298	18.155	28.011	1	0.003
2	19.180	29.037	38.893	48.750	58.606	8.463	18.319	28.176	2	0.005
3	19.345	29.201	39.058	48.914	58.771	8.627	18.483	28.340	3	0.008
4	19.509	29.365	39.222	49.078	58.935	8.791	18.648	28.504	4	0.011
5	19.673	29.530	39.386	49.243	59.099	8.956	18.812	28.668	5	0.014
6	19.837	29.694	39.550	49.407	59.263	9.120	18.976	28.833	6	0.016
7	20.002	29.858	39.715	49.571	59.428	9.284	19.141	28.997	7	0.019
8	20.166	30.022	39.879	49.735	59.592	9.448	19.305	29.161	8	0.022
9	20.330	30.187	40.043	49.900	59.756	9.613	19.469	29.326	9	0.025
10	20.495	30.351	40.207	50.064	59.920	9.777	19.633	29.490	10	0.027
11	20.659	30.515	40.372	50.228	0.085	9.941	19.798	29.654	11	0.030
12	20.823	30.680	40.536	50.393	0.249	10.105	19.962	29.818	12	0.033
13	20.987	30.844	40.700	50.557	0.413	10.270	20.126	29.983	13	0.036
14	21.152	31.008	40.865	50.721	0.578	10.434	20.290	30.147	14	0.038
15	21.316	31.172	41.029	50.885	0.742	10.598	20.455	30.311	15	0.041
16	21.480	31.337	41.193	51.050	0.906	10.763	20.619	30.476	16	0.044
17	21.644	31.501	41.357	51.214	1.070	10.927	20.783	30.640	17	0.047
18	21.809	31.665	41.522	51.378	1.235	11.091	20.948	30.804	18	0.049
19	21.973	31.829	41.686	51.542	1.399	11.255	21.112	30.968	19	0.052
20	22.137	31.994	41.850	51.707	1.563	11.420	21.276	31.133	20	0.055
21	22.302	32.158	42.015	51.871	1.727	11.584	21.440	31.297	21	0.057
22	22.466	32.322	42.179	52.035	1.892	11.748	21.605	31.461	22	0.060
23	22.630	32.487	42.343	52.200	2.056	11.912	21.769	31.625	23	0.063
24	22.794	32.651	42.507	52.364	2.220	12.077	21.933	31.790	24	0.066
25	22.959	32.815	42.672	52.528	2.385	12.241	22.098	31.954	25	0.068
26	23.123	32.979	42.836	52.692	2.549	12.405	22.262	32.118	26	0.071
27	23.287	33.144	43.000	52.857	2.713	12.570	22.426	32.283	27	0.074
28	23.451	33.308	43.164	53.021	2.877	12.734	22.590	32.447	28	0.077
29	23.616	33.472	43.329	53.185	3.042	12.898	22.755	32.611	29	0.079
30	23.780	33.637	43.493	53.349	3.206	13.062	22.919	32.775	30	0.082
31	23.944	33.801	43.657	53.514	3.370	13.227	23.083	32.940	31	0.085
32	24.109	33.965	43.822	53.678	3.534	13.391	23.247	33.104	32	0.088
33	24.273	34.129	43.986	53.842	3.699	13.555	23.412	33.268	33	0.090
34	24.437	34.294	44.150	54.007	3.863	13.720	23.576	33.432	34	0.093
35	24.601	34.458	44.314	54.171	4.027	13.884	23.740	33.597	35	0.096
36	24.766	34.622	44.479	54.335	4.192	14.048	23.905	33.761	36	0.099
37	24.930	34.786	44.643	54.499	4.356	14.212	24.069	33.925	37	0.101
38	25.094	34.951	44.807	54.664	4.520	14.377	24.233	34.090	38	0.104
39	25.259	35.115	44.971	54.828	4.684	14.541	24.397	34.254	39	0.107
40	25.423	35.279	45.136	54.992	4.849	14.705	24.562	34.418	40	0.110
41	25.587	35.444	45.300	55.156	5.013	14.869	24.726	34.582	41	0.112
42	25.751	35.608	45.464	55.321	5.177	15.034	24.890	34.747	42	0.115
43	25.916	35.772	45.629	55.485	5.342	15.198	25.054	34.911	43	0.118
44	26.080	35.936	45.793	55.649	5.506	15.362	25.219	35.075	44	0.120
45	26.244	36.101	45.957	55.814	5.670	15.527	25.383	35.239	45	0.123
46	26.408	36.265	46.121	55.978	5.834	15.691	25.547	35.404	46	0.126
47	26.573	36.429	46.286	56.142	5.999	15.855	25.712	35.568	47	0.129
48	26.737	36.593	46.450	56.306	6.163	16.019	25.876	35.732	48	0.131
49	26.901	36.758	46.614	56.471	6.327	16.184	26.040	35.897	49	0.134
50	27.066	36.922	46.778	56.635	6.491	16.348	26.204	36.061	50	0.137
51	27.230	37.086	46.943	56.799	6.656	16.512	26.369	36.225	51	0.140
52	27.394	37.251	47.107	56.964	6.820	16.676	26.533	36.389	52	0.142
53	27.558	37.415	47.271	57.128	6.984	16.841	26.697	36.554	53	0.145
54	27.723	37.579	47.436	57.292	7.149	17.005	26.861	36.718	54	0.148
55	27.887	37.743	47.600	57.456	7.313	17.169	27.026	36.882	55	0.151
56	28.051	37.908	47.764	57.621	7.477	17.334	27.190	37.047	56	0.153
57	28.215	38.072	47.928	57.785	7.641	17.498	27.354	37.211	57	0.156
58	28.380	38.236	48.093	57.949	7.806	17.662	27.519	37.375	58	0.159
59	28.544	38.400	48.257	58.113	7.970	17.826	27.683	37.539	59	0.162
Mean Solar.	8 ^h	9 ^h	10 ^h	11 ^h	12 ^h	13 ^h	14 ^h	15 ^h	For Seconds.	

TO BE ADDED TO A MEAN TIME INTERVAL.									
Mean Solar.	16 ^h	17 ^h	18 ^h	19 ^h	20 ^h	21 ^h	22 ^h	23 ^h	For Seconds.
m	m s	m s	m s	m s	m s	m s	m s	m s	s s
0	2 37.704	2 47.560	2 57.417	3 7.273	3 17.129	3 26.986	3 36.842	3 46.699	0 0.000
1	2 37.868	2 47.724	2 57.581	3 7.437	3 17.294	3 27.150	3 37.007	3 46.863	1 0.003
2	2 38.032	2 47.889	2 57.745	3 7.602	3 17.458	3 27.315	3 37.171	3 47.027	2 0.005
3	2 38.196	2 48.053	2 57.909	3 7.766	3 17.622	3 27.479	3 37.335	3 47.192	3 0.008
4	2 38.361	2 48.217	2 58.074	3 7.930	3 17.787	3 27.643	3 37.500	3 47.356	4 0.011
5	2 38.525	2 48.381	2 58.238	3 8.094	3 17.951	3 27.807	3 37.664	3 47.520	5 0.014
6	2 38.689	2 48.546	2 58.402	3 8.259	3 18.115	3 27.972	3 37.828	3 47.685	6 0.016
7	2 38.854	2 48.710	2 58.566	3 8.423	3 18.279	3 28.136	3 37.992	3 47.849	7 0.019
8	2 39.018	2 48.874	2 58.731	3 8.587	3 18.444	3 28.300	3 38.157	3 48.013	8 0.022
9	2 39.182	2 49.039	2 58.895	3 8.751	3 18.608	3 28.464	3 38.321	3 48.177	9 0.025
10	2 39.346	2 49.203	2 59.059	3 8.916	3 18.772	3 28.629	3 38.485	3 48.342	10 0.027
11	2 39.511	2 49.367	2 59.224	3 9.080	3 18.937	3 28.793	3 38.649	3 48.506	11 0.030
12	2 39.675	2 49.531	2 59.388	3 9.244	3 19.101	3 28.957	3 38.814	3 48.670	12 0.033
13	2 39.839	2 49.696	2 59.552	3 9.409	3 19.265	3 29.122	3 38.978	3 48.834	13 0.036
14	2 40.003	2 49.860	2 59.716	3 9.573	3 19.429	3 29.286	3 39.142	3 48.999	14 0.038
15	2 40.168	2 50.024	2 59.881	3 9.737	3 19.594	3 29.450	3 39.307	3 49.163	15 0.041
16	2 40.332	2 50.188	3 0.045	3 9.901	3 19.758	3 29.614	3 39.471	3 49.327	16 0.044
17	2 40.496	2 50.353	3 0.209	3 10.066	3 19.922	3 29.779	3 39.635	3 49.492	17 0.047
18	2 40.661	2 50.517	3 0.373	3 10.230	3 20.086	3 29.943	3 39.799	3 49.656	18 0.049
19	2 40.825	2 50.681	3 0.538	3 10.394	3 20.251	3 30.107	3 39.964	3 49.820	19 0.052
20	2 40.989	2 50.846	3 0.702	3 10.559	3 20.415	3 30.271	3 40.128	3 49.984	20 0.055
21	2 41.153	2 51.010	3 0.866	3 10.723	3 20.579	3 30.436	3 40.292	3 50.149	21 0.057
22	2 41.318	2 51.174	3 1.031	3 10.887	3 20.744	3 30.600	3 40.456	3 50.313	22 0.060
23	2 41.482	2 51.338	3 1.195	3 11.051	3 20.908	3 30.764	3 40.621	3 50.477	23 0.063
24	2 41.646	2 51.503	3 1.359	3 11.216	3 21.072	3 30.929	3 40.785	3 50.642	24 0.066
25	2 41.810	2 51.667	3 1.523	3 11.380	3 21.236	3 31.093	3 40.949	3 50.806	25 0.068
26	2 41.975	2 51.831	3 1.688	3 11.544	3 21.401	3 31.257	3 41.114	3 50.970	26 0.071
27	2 42.139	2 51.995	3 1.852	3 11.708	3 21.565	3 31.421	3 41.278	3 51.134	27 0.074
28	2 42.303	2 52.160	3 2.016	3 11.873	3 21.729	3 31.586	3 41.442	3 51.299	28 0.077
29	2 42.468	2 52.324	3 2.181	3 12.037	3 21.893	3 31.750	3 41.606	3 51.463	29 0.079
30	2 42.632	2 52.488	3 2.345	3 12.201	3 22.058	3 31.914	3 41.771	3 51.627	30 0.082
31	2 42.796	2 52.653	3 2.509	3 12.366	3 22.222	3 32.078	3 41.935	3 51.791	31 0.085
32	2 42.960	2 52.817	3 2.673	3 12.530	3 22.386	3 32.243	3 42.099	3 51.956	32 0.088
33	2 43.125	2 52.981	3 2.838	3 12.694	3 22.551	3 32.407	3 42.264	3 52.120	33 0.090
34	2 43.289	2 53.145	3 3.002	3 12.858	3 22.715	3 32.571	3 42.428	3 52.284	34 0.093
35	2 43.453	2 53.310	3 3.166	3 13.023	3 22.879	3 32.736	3 42.592	3 52.449	35 0.096
36	2 43.617	2 53.474	3 3.330	3 13.187	3 23.043	3 32.900	3 42.756	3 52.613	36 0.099
37	2 43.782	2 53.638	3 3.495	3 13.351	3 23.208	3 33.064	3 42.921	3 52.777	37 0.101
38	2 43.946	2 53.803	3 3.659	3 13.515	3 23.372	3 33.228	3 43.085	3 52.941	38 0.104
39	2 44.110	2 53.967	3 3.823	3 13.680	3 23.536	3 33.393	3 43.249	3 53.106	39 0.107
40	2 44.275	2 54.131	3 3.988	3 13.844	3 23.700	3 33.557	3 43.413	3 53.270	40 0.110
41	2 44.439	2 54.295	3 4.152	3 14.008	3 23.865	3 33.721	3 43.578	3 53.434	41 0.112
42	2 44.603	2 54.460	3 4.316	3 14.173	3 24.029	3 33.886	3 43.742	3 53.598	42 0.115
43	2 44.767	2 54.624	3 4.480	3 14.337	3 24.193	3 34.050	3 43.906	3 53.763	43 0.118
44	2 44.932	2 54.788	3 4.645	3 14.501	3 24.358	3 34.214	3 44.071	3 53.927	44 0.120
45	2 45.096	2 54.952	3 4.809	3 14.665	3 24.522	3 34.378	3 44.235	3 54.091	45 0.123
46	2 45.260	2 55.117	3 4.973	3 14.830	3 24.686	3 34.543	3 44.399	3 54.256	46 0.126
47	2 45.425	2 55.281	3 5.137	3 14.994	3 24.850	3 34.707	3 44.563	3 54.420	47 0.129
48	2 45.589	2 55.445	3 5.302	3 15.158	3 25.015	3 34.871	3 44.728	3 54.584	48 0.131
49	2 45.753	2 55.610	3 5.466	3 15.322	3 25.179	3 35.035	3 44.892	3 54.748	49 0.134
50	2 45.917	2 55.774	3 5.630	3 15.487	3 25.343	3 35.200	3 45.056	3 54.913	50 0.137
51	2 46.082	2 55.938	3 5.795	3 15.651	3 25.508	3 35.364	3 45.220	3 55.077	51 0.140
52	2 46.246	2 56.102	3 5.959	3 15.815	3 25.672	3 35.528	3 45.385	3 55.241	52 0.142
53	2 46.410	2 56.267	3 6.123	3 15.980	3 25.836	3 35.693	3 45.549	3 55.405	53 0.145
54	2 46.574	2 56.431	3 6.287	3 16.144	3 26.000	3 35.857	3 45.713	3 55.570	54 0.148
55	2 46.739	2 56.595	3 6.452	3 16.308	3 26.165	3 36.021	3 45.878	3 55.734	55 0.151
56	2 46.903	2 56.759	3 6.616	3 16.472	3 26.329	3 36.185	3 46.042	3 55.898	56 0.153
57	2 47.067	2 56.924	3 6.780	3 16.637	3 26.493	3 36.350	3 46.206	3 56.063	57 0.156
58	2 47.232	2 57.088	3 6.944	3 16.801	3 26.657	3 36.514	3 46.370	3 56.227	58 0.159
59	2 47.396	2 57.252	3 7.109	3 16.965	3 26.822	3 36.678	3 46.535	3 56.391	59 0.162
Mean Solar.	16 ^h	17 ^h	18 ^h	19 ^h	20 ^h	21 ^h	22 ^h	23 ^h	For Seconds.

TABLE FOR FINDING THE LATITUDE BY AN OBSERVED
ALTITUDE OF POLARIS.

Reduce the observed altitude of Polaris to the true altitude.

Reduce the recorded time of observation to the local sidereal time.

If the sidereal time is $\begin{cases} \text{less than } 1^h 24.6^m, \text{ subtract it from } 1^h 24.6^m; \\ \text{between } 1^h 24.6^m \text{ and } 13^h 24.6^m, \text{ subtract } 1^h 24.6^m \text{ from it;} \\ \text{greater than } 13^h 24.6^m, \text{ subtract it from } 25^h 24.6^m; \end{cases}$

and the remainder is the hour-angle of Polaris.

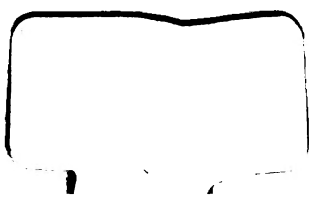
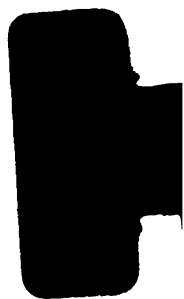
With this hour-angle take out the correction from Table IV (below), and add it to or subtract it from the true altitude, according to its sign. The result is the approximate latitude of the place.

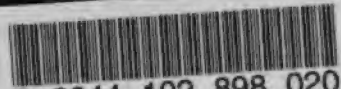
Example.—1903, October 27, at $10^h 40^m 30^s$, P. M., mean solar time, in longitude 29° east of Greenwich, suppose the true altitude of Polaris to be $43^\circ 20'$: required the latitude of the place.

Local astronomical mean time	h	m	s
Reduction from Table III, for $10^h 40^m 30^s$	10	40	30
Greenwich sidereal time of mean noon, October 27, page 165	+	1	45
Reduction from Table III, for longitude ($= 1^h 56^m$ east, or minus)	14	18	41
Sum (having regard to signs) is equal to local sidereal time	—	0	19
	1	00	37
Subtract sidereal time	h	m	s
	1	24	36
Remainder is equal to hour-angle of Polaris	1	00	37
	0	23	59
True altitude	+	43	20
Correction from Table IV (below)	—	1	12
Approximate latitude	+	42	08

TABLE IV.—1903.

Hour Angle.	0 ^h	1 ^h	2 ^h	3 ^h	4 ^h	5 ^h
m						
0	— 0 12.8	— 1 10.2	— 1 02.8	— 0 51.0	— 0 35.8	— 0 18.2
5	1 12.8 0.0	1 09.8 0.4	1 02.0 0.8	0 49.9 1.1	0 34.4 1.4	0 16.7 1.5
10	1 12.7 0.1	1 09.3 0.5	1 01.1 0.9	0 48.7 1.2	0 33.0 1.4	0 15.1 1.6
15	1 12.6 0.1	1 08.8 0.5	1 00.2 0.9	0 47.5 1.2	0 31.6 1.4	0 13.5 1.5
20	— 1 12.5 0.1	— 1 08.3 0.6	— 0 59.3 0.9	— 0 46.3 1.3	— 0 30.2 1.5	— 0 12.0 1.6
25	1 12.4 0.2	1 07.7 0.6	0 58.4 1.0	0 45.0 1.3	0 28.7 1.5	0 10.4 1.6
30	1 12.2 0.2	1 07.1 0.6	0 57.4 1.0	0 43.7 1.3	0 27.2 1.5	0 08.8 1.6
35	1 12.0 0.3	1 06.5 0.7	0 56.4 1.0	0 42.4 1.3	0 25.7 1.5	0 07.2 1.6
40	— 1 11.7 0.3	— 1 05.8 0.7	— 0 55.4 1.1	— 0 41.1 1.3	— 0 24.2 1.5	— 0 05.6 1.6
45	1 11.4 0.4	1 05.1 0.7	0 54.3 1.1	0 39.8 1.3	0 22.7 1.5	0 04.0 1.5
50	1 11.0 0.4	1 04.4 0.8	0 53.2 1.1	0 38.5 1.3	0 21.2 1.5	0 02.5 1.5
55	1 10.6 0.4	1 03.6 0.8	0 52.1 1.1	0 37.2 1.3	0 19.7 1.5	— 0 00.9 1.6
60	— 1 10.2 0.4	— 1 02.8 0.8	— 0 51.0 1.1	— 0 35.8 1.4	— 0 18.2 1.5	+ 0 00.8 1.7
Hour Angle.	6 ^h	7 ^h	8 ^h	9 ^h	10 ^h	11 ^h
m						
0	+ 0 00.8	+ 0 19.6	+ 0 37.0	+ 0 51.8	+ 1 03.2	+ 1 10.4
5	0 02.4 1.6	0 21.1 1.5	0 38.4 1.4	0 52.9 1.1	1 04.0 0.8	1 10.8 0.4
10	0 04.0 1.6	0 22.6 1.5	0 39.7 1.3	0 54.0 1.1	1 04.7 0.7	1 11.2 0.4
15	0 05.5 1.6	0 24.1 1.5	0 41.0 1.3	0 55.1 1.0	1 05.4 0.7	1 11.5 0.3
20	+ 0 07.1 1.6	+ 0 25.6 1.5	+ 0 42.3 1.2	+ 0 56.1 1.0	+ 1 06.1 0.6	+ 1 11.8 0.2
25	0 08.7 1.6	0 27.1 1.5	0 43.5 1.3	0 57.1 1.0	1 06.7 0.6	1 12.0 0.2
30	0 10.3 1.6	0 28.6 1.4	0 44.8 1.3	0 58.1 0.9	1 07.3 0.6	1 12.2 0.2
35	0 11.9 1.6	0 30.0 1.4	0 46.1 1.2	0 59.0 0.9	1 07.9 0.5	1 12.4 0.1
40	+ 0 13.5 1.5	+ 0 31.4 1.4	+ 0 47.3 1.2	+ 0 59.9 0.9	+ 1 08.4 0.5	+ 1 12.5 0.1
45	0 15.0 1.5	0 32.8 1.4	0 48.5 1.1	1 00.8 0.9	1 08.9 0.5	1 12.6 0.1
50	0 16.6 1.5	0 34.2 1.4	0 49.6 1.1	1 01.7 0.8	1 09.4 0.5	1 12.7 0.1
55	0 18.1 1.5	0 35.6 1.4	0 50.7 1.1	1 02.5 0.7	1 09.9 0.5	1 12.8 0.1
60	+ 0 19.6 1.5	+ 0 37.0 1.4	+ 0 51.8 1.1	+ 1 03.2 0.7	+ 1 10.4 0.5	+ 1 12.8 0.0





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